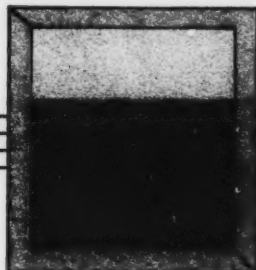




A REVIEW OF FUNCTIONAL ABILITY AND HOME ENVIRONMENT ASSESSMENT PROTOCOLS



APPLIED PROGRAM TECHNOLOGY UNIT

PROVINCE OF ONTARIO
MINISTRY OF COMMUNITY AND SOCIAL SERVICES

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EXECUTIVE SUMMARY

This report presents the findings of a review of existing functional status and environmental assessment instruments. The review was undertaken to assess the potential usefulness of existing instruments as tools to identify needs of elderly persons which can be met through the provision of technical aids, devices, or home modifications.

The objectives of this review were the following:

- . to provide a critical review of instruments that:
 - assess the functional ability of older persons/or adults;
 - assess the experience, satisfaction, and/or acceptance of older persons/adults with technological aids or assistive devices; and
 - assess the home environments of older persons/adults with a view to identifying structural barriers.
- . in order to determine the suitability of existing assessment instruments for providing home based assessments of elderly persons with a view towards identifying technological supports that might assist them in those daily living activities in which they are experiencing functional difficulties.
- . to document the conceptual and methodological shortcomings and merits of existing assessment protocols including acceptability.
- . if none of the existing assessment tools meet the above stated objectives then to further provide guidelines to the modification and/or development of a suitable instrument.

The major findings concerning the existing tools reviewed are the following:

- . While there are many functional assessment instruments currently available, there are relatively few environmental assessment instruments and no standardized instruments to assess attitudes or experience with aids and assistive devices.
- . Several factors limit the applicability of existing instruments as tools to identify needs for technical aids or home modifications. Primary among these are:
 - divergent purposes. None of the tools available were developed for the purpose of identifying needs for technological assistance;
 - narrowness of scope. Most instruments fail to assess mental status and social support in relation to functional abilities;
 - narrowness of measurement focus. Most instruments measure functional ability and the home environment only in terms of the amount of assistance required to perform activities or negotiate in the home environment, and fail to consider safety, ease or endurance; and
 - focus on institutionalized populations. Most instruments have been designed and used primarily with institutionalized elderly persons.

Given the lack of appropriate existing tools it is recommended that:

- . A functional status scale be developed to assess an individual's ability, safety and ease in performing activities in the home environment.
- . An environmental assessment tool that assesses structural barriers in the home be developed through the expansion and

modification of portions of the Environmental Assessment of Kiyak et al (1985).

- . A multidimensional attitudinal scale should be developed to measure specific attitudes towards technical aids and to measure needs and preferences. This would initially be an experimental tool, which could be refined based on information on the acceptance and use of devices and modifications provided.

An instrument incorporating these three assessment elements would provide the information required to identify functional disabilities and home environment barriers that are amenable to technological solutions. Organizing the instrument around functional and architectural elements compatible with the categorization used in the ABLEDATA data base would enhance the ease and consistency with which specific device solutions could be identified and prescribed.

I INTRODUCTION

This review of instruments was undertaken to assess the potential usefulness of existing functional status and environmental assessment tools in identifying the needs of elderly persons that can be addressed through technological assistance.

The proportion of the population 65 years of age and over is growing rapidly. The increasing number of older persons in the population has placed increasing demands on both institutional and non-institutional service programs. While most older people prefer to remain in their homes, disability and declining functional status make it difficult for many older people to maintain their independence in their homes. These difficulties are often compounded by the environmental design of homes which for example limit wheelchair accessibility.

Rapid changes in technology have resulted in the development and increased availability of technical aids and home modifications. These new technical aids and devices can be used to assist older persons in remaining in their homes, maintaining their independence and improving the quality of their lives. However, for this to occur, appropriate aids, devices, and environmental modifications must be matched with the needs of elderly individuals.

The following chapters review the requirements for an assessment system to identify the needs of community living elderly individuals for technical aids or environmental modifications. They examine the extent to which existing protocols are suitable for assessing needs. The objectives of this review are to:

1. provide a critical review of instruments that: a) assess the functional ability of older persons; b) assess the experience, satisfaction, or acceptance of older persons with technical aids or assistive devices; and c) assess the home environments of older persons especially with respect to identifying structural barriers;

2. document the conceptual and methodological merits and shortcomings of existing assessment instruments;
3. recommend either the adoption, modification or development of an assessment tool; and
4. provide guidelines if the modification or development of a tool is required.

Chapter II provides an overview of the issues and model of a system for linking appropriate technical aids and devices with elderly persons in need. Chapter III reviews existing functional assessment tools and Chapter IV reviews environmental assessment tools. Chapter V presents approaches to assessing experience with and attitudes towards technical aids and assistive devices. Chapter VI summarizes the findings of the review of available tools and presents recommendations concerning the development of an assessment tool to identify needs of the elderly for technological assistance.

II OVERVIEW

The primary objective of this review is to evaluate the suitability of existing assessment protocols as tools to determine needs and requirements of the elderly for technical aids, devices, or home modifications. The scope of the review is limited to the evaluation of existing assessment tools and the development of guidelines for the selection, modification or development of an appropriate assessment tool for this purpose. While the focus of the review is on tools for assessing needs for technical aids and home modifications, the way in which such an assessment would be used to guide prescription decisions is also considered. The assessment of needs is just one step in the process of identifying and prescribing appropriate technical devices and aids to improve the functional status and quality of life of an elderly person. Other steps include the identification of alternative appropriate devices and the selection of an aid from among these alternatives. The specific approach used at each step may affect the design requirements for a suitable tool.

Basic requirements of the assessment protocol have been established by the Ministry of Community and Social Services (MCSS). These are:

- . to assess functional ability at an appropriate level of specificity to identify the possibility of technological solutions;
- . to assess structural barriers in the home environment in order to identify the possibility of technological solutions;
- . to assess the experience and satisfaction of older persons with technological aids and assistive devices to predict their acceptance of proposed solutions;
- . to be modular in form so that specific sections can be used with targeted populations of elderly persons;
- . to be closely keyed to electronic information bases on aids and devices (such as ABLEDATA*), so that when the needs assessment is completed, the potential technological solutions can easily be determined; and
- . to be administered by lay people with a limited training period on the use of the tool.

*ABLEDATA is a computerized database containing information on aids, devices and environmental modifications.

EXHIBIT I

MODEL OF ASSESSMENT/PRESCRIPTION PROCESS

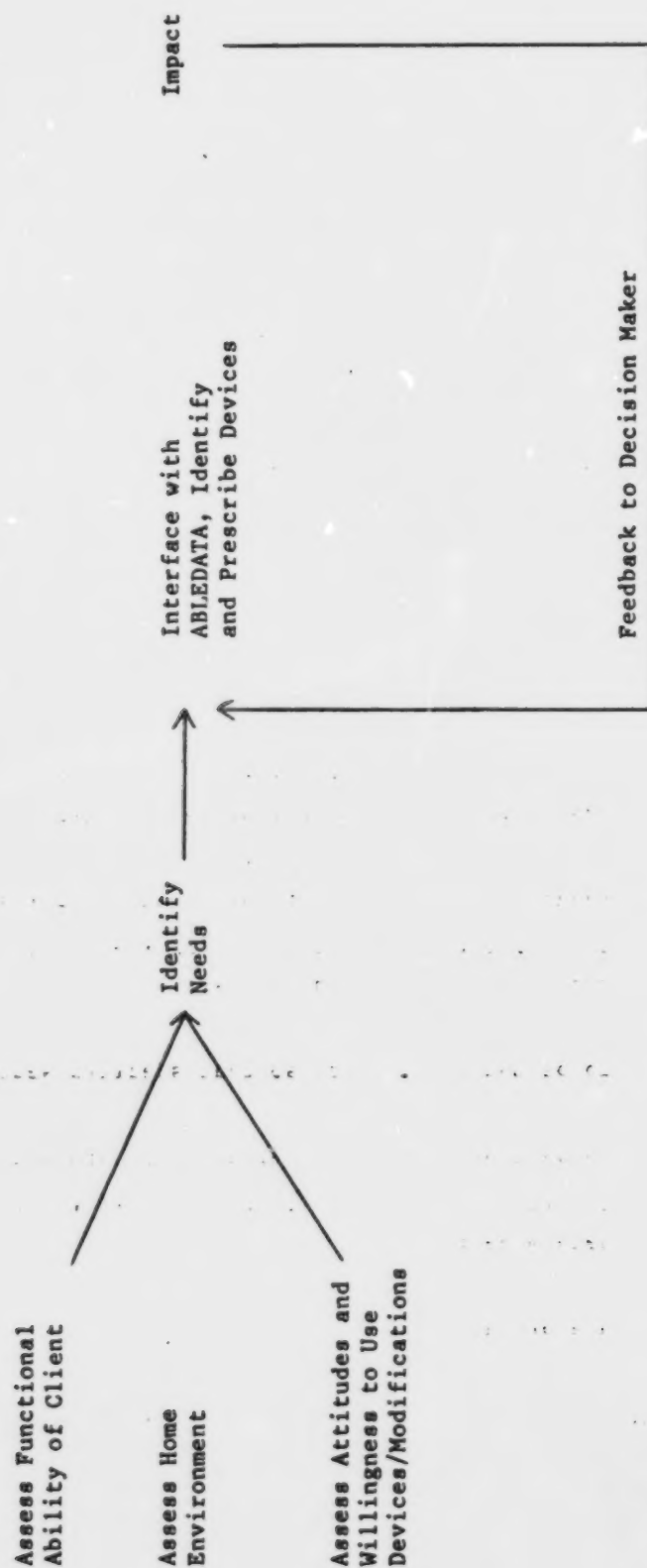


Exhibit 1 (opposite page) provides a model of the role of needs assessment in the process of identifying and prescribing technical devices or modifications. As indicated in this model, a thorough assessment of both the functional abilities and attitudes of the individual and the characteristics of their home environment can be used to determine the needs of the individual. Needs are then matched with technological solutions which may involve the prescription of an assistive device or modification of the home environment. Information on the individual's abilities and his/her experience with and attitudes towards device use is considered to assist in the identification and selection of preferred devices.

The process that will be used to move from the assessment findings to the selection of an aid from a data base on aids and devices such as ABLEDATA is not stated in the MCSS requirements. This process of translating information on the needs, abilities and attitudes of an elderly person into the identification of a technical aid or device could be accomplished through the use of health care professionals or an expert computer system. These approaches are described in greater detail below because they can effect the type and detail of assessment information required.

First, a health care professional experienced in the assessment of the elderly, knowledgeable of the range of aids/devices and familiar with search procedures in ABLEDATA could be used to review the assessment information and select appropriate aids and devices. By contrast health professionals such as occupational therapists, physiotherapists, nurses, orthotists, prosthetists and rehabilitation engineers traditionally have performed both the functions of assessing clients and of identifying suitable aids and devices. Often the assessment is conducted by using a discipline specific assessment form. Frequently the assessment is performed outside of the client's home, either in hospital prior to discharge or in an outpatient clinic. The selection of an aid or device is usually dependent on the health professional's experience with and knowledge of the range of devices. Data bases and directories such as

ABLEDATA, the Green Pages, ISAARE, are usually not available to the assessor. The traditional process of assessment and identification has several disadvantages:

- . the assessment process is costly because of the heavy involvement of professional personnel;
- . the reliability and validity of the assessment tool/procedures are not known;
- . the clients' full range of needs may not be considered (the assessor may have a tendency to concentrate on areas of ability which are the focus of their discipline);
- . the full range of aids and devices may not be considered, with the large number of aids available and the rapid changes occurring in technology, it is difficult to become and remain familiar with all of them; and
- . the home environment is sometimes not considered and so the potential to make home modifications may not be utilized.

The use of an assessment protocol meeting the MCSS requirements (i.e. that the protocol assess functional ability, the home environment and attitudes towards technological aids and be administered by lay people) would avoid many of these problems. However, even if such an assessment is conducted and the results of the assessment are reviewed by a health professional with access to the ABLEDATA data base on aids/devices, two problems remain: the costs of involving professionals and the variability between professionals in their knowledge and expertise in accessing and searching ABLEDATA.

A second possible approach to providing a decision-making function that interfaces between the assessment information and information on the range of technical aids available is to use an expert system. An expert system is an artificial intelligence computer decision-making system. Such systems are usually developed through a detailed examination and analysis of the decision-making rules and processes of experts. Morris, Sherwood and Mor (1984) describe their work attempting to develop instruments for replicating clinical team judgements concerning need for service programs. They report that "...despite the difficulties that clinicians experience when they are asked to enumerate the

criteria they use in making allocation decisions *ex posteriori*, it is obvious that a fairly rigorous logic is at work." (p. 374). It is this logic which is formalized in the expert system. Advantages of this approach include:

- . once developed, it is low cost to operate;
- . it provides for consistency in the alternatives considered and decisions reached; and
- . it is easily updated.

While expert systems have been developed to determine diagnoses based on symptoms and laboratory findings, the technical aid decision-making situation may pose problems. One problem is the difficulty of determining the "correctness" of a given decision. While the correctness of a medical diagnosis can usually be determined by the response to treatment, further testing, or even autopsy, the correctness of a particular device prescription is more difficult to determine. Two possible indicators of the correctness of device selection are use of the device and impact of device use. If the device is used by the individual and does result in an improvement in functional ability, the device selection may be considered to have been correct. However, there is still the possibility that a better device which would have resulted in even greater benefits to the individual had been overlooked. This difficulty in gauging the correctness of decisions has several implications for the development and use of an expert system. If the correctness of decisions cannot be easily documented, it is difficult to identify experts in the identification and selection of appropriate devices. Also, without clear measures of correctness, it is difficult to provide the expert system with effective feedback so that it continues to "learn" and improve on the initial decision-making processes. The ability to "learn" is especially important since the range of aids and devices is continually changing.

The process used to determine appropriate aids and devices for an individual is important since it may have implications for the selection and/or development of existing instruments. For example, while a health professional could use descriptive summary assessment notes on an individual in selecting an

appropriate aid, all assessment information must be coded in order to be used by an expert system. While no assumptions were made concerning the specific decision-making process to be used in accessing ABLEDATA and identifying appropriate devices, the review does assume that it is desirable to obtain detailed objectively coded assessment information that could be utilized by either approach.

The final step in the model of the assessment/prescription process involves searching the ABLEDATA data base system. This is a data base of assistive devices and home adaptations. It is organized around activity or environmental categories such as personal care, home management, vocational and educational management, mobility, architectural elements, etc.

The data base can be searched by device type, manufacturer, key descriptors, etc. The more compatible an assessment tool is with these organizational categories and search procedures, the easier it will be to provide an interface (whether human or computer) between the assessment data and device information.

In summary, the stated requirements for an assessment tool together with the model of the assessment/prescription process provide a framework for the review of the literature and existing tools.

III ASSESSING FUNCTIONAL ABILITY

Recent reviews of functional assessment instruments (Bruett and Overs, 1969; Forer, 1982; Granger and Gresham, 1984; Israel et al, 1984; Kane and Kane, 1981) indicate that many reliable, objective assessment tools are currently available. The instruments available vary in terms of assessment purpose, domains covered, assessment approach, qualifications and training required of staff to administer, rating scale, length, reliability and validity. The discussion below covers the characteristics of these tools, their conceptual and methodological problems, and their suitability as assessment protocols for determining need for technical aids.

Functional Ability, Capability and Performance

It is important to distinguish between the functional ability, performance and potential of an individual. Functional ability refers to the ability of a person to perform everyday activities. It refers to what the person is able to or can do given the environment in which he/she lives. Functional performance refers to what the person does do, while functional potential refers to what the person would be able to do with some modification of the environment, provision of equipment or assistance, or treatment intervention. For example, a 68 year old male, above knee amputee, may have the functional ability to walk with two crutches. In terms of functional performance, however, he usually uses a wheel chair. With respect to functional potential, he would be able to walk independently without aids if trained and provided with a prosthesis.

Most functional assessment tools are designed to measure functional ability (e.g. Barthel Index, Mahoney and Barthel, 1965; Function Status Index, Reynolds, Rushing and Miles, 1974; Katz Index of ADL, Katz, Ford, Moskowitz, Jackson and Jaffee, 1963; Kenny Revised Self Care Index, Schoening and Iverson, 1968; Patient Evaluation Conference System - Occupational Therapy Scale, Harvey and Jellinek, 1982). Several scales or measurement tools have been developed to measure functional performance. These include the Rehabilitation Indicators' Status Indicators and Activity Pattern Indicators (Brown, Gordon

and Diller, 1984; Diller, Fordyce and Jacobs, 1981), and Wheelchair Odometer Measures (Alexander, Willems and Halstead, 1928) and the Longitudinal Functional Assessment Inventory (Rintala et al, 1980, 1984). Although Kuriansky and Gurland (1976) have developed an assessment instrument titled Performance Test of ADL, this instrument does measure functional performance as defined above. It is a standard test of ability to perform specific activities not a measure of usual or normal daily functional performance. Few instruments attempt to measure functional potential. The Patient Evaluation Conference System instrument (Harvey and Jellinek, 1982) provides for rating both current functional ability and goal or expected functional ability with treatment.

Another methodological issue in assessing functional status concerns whether to assess usual, lowest or highest ability (Bloom and Blenkner, 1970). An elderly person's ability to perform activities may vary day to day or even during the day. The lowest level is easier to define than the usual level of ability and is a more meaningful indicator of need.

Failure to clearly distinguish between these different types of functional status may result in confusion concerning functional assessment on many scales of functional ability. Many scales do not provide clear instructions concerning the type of functional status to be rated. As a result some clinicians may rate what the individual is optimally capable of doing and other what the individual normally does. The same confusion can occur with self-report measures of functional status.

Functional assessment directed at identifying needs for technical aids should focus first on the assessment of functional ability. In the case of activities which the individual is not functionally able to do, previous functional performance, the availability of assistance and support in performing the activities, and the priority placed on the performance of the activity should be considered. For example, if a person is not able to wash the dishes, never washed the dishes in the past, is not interested in washing the dishes and has a spouse who currently washes the dishes, it is not reasonable to prescribe a technical aid to enable performance of this activity. The Adaptation to

Person-Environment Incongruence Tool of Kiyak, Small and Sumitani (1985) assesses functional abilities in relationship to previous skills and, if an individual is not able to perform an activity, records whether assistance is provided by someone or whether the activity is simply not performed. None of the instruments reviewed measures the importance of performance of the activity to the client. A recent survey assessing the priorities the elderly placed on various activities provides a model of methods for determining the relative importance of specific activities (Nasar and Farokhpay, 1985.)

Purpose of Functional Assessment

Halpern and Fuhrer (1984) define functional assessment as:

"...the measurement of purposeful behavior in interaction with the environment, which is interpreted according to the assessment's intended uses" (p. 3).

The intended uses of the assessment affect not only the interpretation of the measures but also the scope and detail of the assessment. Traditional uses of functional assessment include description, screening, assessment, monitoring and prognosis (Kane and Kane, p.14, 1981; Schoening et al, 1965).

Most functional assessment tools have been developed to monitor functional level and changes in level for clinical or research purposes. Clinically the tools are used to assess status, identify activities on which therapy should concentrate and monitor progress or change. In research, the tools are used as measures of impact or outcome, or to describe the characteristics of sample or population studied. Instruments have been developed for a variety of other purposes. The Older Americans Resources and Services Program (OARS) Multidimensional Functional Assessment Questionnaire (MFAQ) was originally

developed as a research tool to gather longitudinal data on the functional status of elderly cohort in relation to alternative geriatric services to determine viable, economic alternatives to long-term institutionalization (Maddox, 1985). With respect to the determination of needs, several functional assessment tools have been used to determine placement needs (e.g. Granger et al, 1977; Grauer and Birnbom, 1975; Densen and Jones, 1976) or to plan services (Fortinsky et al, 1981). Normative descriptive data on functional ability has been used to assess community needs (Little, 1980; Feller, 1983). However no tools were found that were developed for the purpose of assessing individual needs for technical aids.

The available instruments also vary in terms of population of intended use. In assessing the technical aid needs of elderly people in the community it is preferable to use a tool which has been developed for use with a non-institutionalized general elderly population. Specific functional assessment tools for diagnostic groups such as arthritis (Badley, Wagstaff and Wood, 1984); stroke (Anderson et al, 1978); and Alzheimers (Kiyak et al, 1985) and for treatment areas such as physical rehabilitation (Diller, Fordyce and Jacobs, 1981; Harvey and Jellinek, 1981), and vocational rehabilitation (Crewe and Athelstan, 1979, Crewe, Athelstan and Meadows, 1975; Crewe and Turner, 1984) have been developed. Many tools have been developed on and for use with the institutionalized elderly (Schoening and Iversen, 1965; Densen and Jones, 1976; Gurel, Linn and Linn, 1972) and as a result focus on basic ADL areas. Fewer have been developed for the community living elderly (Moos, 1974; Gross-Andrew and Zimmer, 1978).

Domains Covered

Functional status is a multidimensional construct and so several different domains may be considered in assessing functional ability. The multiple dimensions of health identified by the World Health Organization in 1948 can similarly be applied to functional status. These are dimensions of function: physical, social, and emotional. The Rand group has further subdivided the physical dimension into the categories of mobility, physical, self-care, role functioning, household, and leisure activities. Scales of activities of daily living (ADL) tap the self-care and mobility categories. Instrumental activities of daily living (IADL) measures and leisure inventories tap the

household, leisure and complex self care activities. Health scales, sickness inventories, range of motion measures concern the physical category of function. Few scales specifically address role functioning. The social dimension of functional status has been addressed by scales of social networks and social interaction. The emotional and mental dimension can be assessed using a variety of psychological scales developed for the general adult population and specialized scales of attitudes and mental status developed for the elderly. Assessment instruments designed to measure the domains of physical ability (especially ADL/IADL), social and mental domains are discussed in greater detail below.

Physical Ability - ADL and IADL. Most include measures of ability to perform the basic personal care activities of daily living (ADL). These comprise activities such as dressing, bathing, eating, and mobility. In addition, some protocols include measures of instrumental activities of daily living (IADL). These consist of the more complex activities which are necessary to maintain independent living, such as telephone use, meal preparation, shopping, housework, handling personal finances, etc.

Assessment of ADL functions alone may provide all the relevant information required on the functional abilities of the institutionalized elderly, since both the need and opportunity to perform activities such as meal preparation and doing the laundry are limited. However in assessing elderly individuals in the community, it is essential to include the domain of IADL. Performance of these more complex activities is necessary for the maintenance of independent living in the community. Surveys of non-institutionalized elderly indicate that assistance is more frequently needed in IADL than in ADL (Feller, 1983; Branch and Jette, 1983; Stoller and Earl, 1983). While these surveys were all conducted in the United States, there is little reason to believe that a different pattern of need would exist in Canada.

The range of tasks included on IADL scales varies. The Philadelphia Geriatric Center Instrumental Activities of Daily Living Scale (Lawton, 1972) contains 31 items focussing on tasks relevant to the independence of the community living

elderly, such as using the telephone, doing laundry and taking medicine. The Functional Life Scale (Sarno, Sarno and Levita, 1973) contains items on activities as going to theater which may measure social status or interests rather than functional abilities related to independent community living. While the ability to perform activities relevant to the individual's perceived quality of life should not be ignored, a functional assessment tool designed to identify needs for technical aids should focus primarily on IADL items which are generally applicable for the elderly and are related to ability to maintain independent community living.

Lawton (1972) has commented that IADL scales tend to overemphasize tasks traditionally performed by women -- meal preparation, laundry, vacuuming, etc. Only a few scales (e.g. Jette and Deniston, 1978; Rosow and Breslau, 1966) include activities traditionally performed by men -- shovelling snow, minor repairs in the house, etc. Because of the potential for sex bias in the measurement of IADL, instructions should clearly state whether normal daily performance of IADL tasks or the ability to perform these tasks is to be rated.

Mental Status. Because functional abilities and mental status are interrelated, items concerning orientation and memory are often either included in indexes of functional status, or administered as a separate tool as part of an assessment battery. Amongst the most frequently used mental status tests are the Short Portable Mental Status Questionnaire (incorporated in the OARS Methodology, 1978), and the Mental Status Questionnaire (Kahny et al, 1960). Each of these contains 10 items measuring orientation to person, place, and time and recent and distant memory. The lengthier (35 items) Philadelphia Geriatric Center Mental Status Questionnaire (Fishback, 1977) also includes items concerning continence and the ability to dress and feed oneself.

Mental status, especially orientation and confusion, is an important consideration in the identification and selection of technical aids. Confusion may limit an individual's ability to properly use an aid or device, or may indicate the use of a more sophisticated device which "thinks for the individual".

Social Functioning. A final domain of concern is social functioning. The domain of social functioning has been divided by Kane and Kane (1981) into three component concepts: 1) social interactions and resources; 2) personal coping and subjective well-being; and 3) environmental fit. The social interactions and resources of an individual may be particularly important in determining needs for technical aids. Environmental fit is equally important and discussed in greater detail in Chapter IV on environmental assessment.

In assessing need for technical aids and home modifications, social support and assistance provided to fulfill need areas in which the individual is dependent should be carefully considered. It is not necessarily desirable to attempt to replace all areas of dependence on human assistance with dependence on technical aids. First, the individual may prefer to rely on the assistance of another person. Secondly, he/she may find it easier to rely on another person as opposed to using an assistive device. These preferences are reasonable as long as assistance is available and does not place undue strain on the person responsible for helping. Finally, assistance of another person for some activities may fulfill needs which could not be met through use of a technical aid, for example providing social stimulation or outside monitoring of the individual's status. The fulfillment of these needs is especially important if the individual's social network is small.

There are many existing tools to measure social supports, networks, and resources. The measurement approaches of such scales include interviewing individuals concerning the type and frequency of their contacts with family and friends (e.g. Network Analysis Profile, Cohen and Sokolovsky, 1979; HRCA Social Interaction Inventory, Sherwood et al, 1977), usual day recording of hours spent in various types of social activities (Usual Day, Schonfield, 1973) and future commitments for social contacts (Future Activity Scores, Schonfield, 1973). The OARS Multidimensional Assessment contains a Social Resources Scale which assesses family composition contacts and availability of assistance. Berkman (1983) has developed a tool which measures not only the individuals social network, but also the importance of various contacts. This

information may be particularly useful in guiding decisions concerning desirability of replacing human assistance with technical aids.

Scaling and Measurement Approaches

Scaling Techniques. Likert scales and Guttman scales are commonly utilized in measuring functional ability. Likert scales, ordinal scales usually consisting of 5-point or 7-point ranges, are often employed in functional ability and home environment assessments to measure an individual's dependence or independence. For example, the Functional Life Scale (Sarno, Sarno and Levita, 1973) ranks the patient's actual performance of 44 items using a 5-point scale, ranging from (0) "does not perform the activity at all" to (4) "normal". For the Cumulative Illness Rating Scale (Linn, Linn and Gurel, 1968) a 5-point scale is used to determine an individual's level of impairment. It extends from (0) "none" to (4) "extremely severe". Both the Services Assessment Questionnaire (SAQ) and the Instrumental Activities of Daily Living (IADL) of the OARS Questionnaire use a 6-point scale, ranging from (1) "excellent" to (6) "totally impaired".

The adaptation of the Kenny Self-Care Evaluation, derived by Schoening and Iversen (1968) and Schoening, Anderegg, Bergstrom, Fonda, Steike and Ulrich (1965), employs a different type of 5-point scale. While still utilizing an ordinal scale, it rates individuals on the number of steps of a particular activity that they can complete. For example, it was determined that there are seven distinct steps involved for an individual to move from a wheelchair to a standing position. A person is rated on a 5-point scale according to the following criteria:

- 4 - able to perform all steps;
- 3 - able to perform all but one or two steps independently and the rest with assistance;
- 2 - the possible combinations not covered by the other 4 ratings;

1 - able to perform one or two steps with assistance and unable to perform the others; and

0 - unable to perform any of the steps.

Guttman scales are used to measure a single concept or dimension of functional ability. For example, on the Katz Index of ADL (Katz et al, 1963) six ADL functions (bathing, dressing, going to the toilet, transfer, continence and feeding) are ordered in terms of difficulty and are rated dichotomously, with one point given for each item where dependency exists.

The Philadelphia Geriatric Center's Instrumental Role Maintenance Scale (Lawton, 1969) is a 4-item Guttman Scale. It rates the frequency of shopping and meal preparation (other than breakfast) rather than the capacity to do these activities. It also rates the distance of shopping from the residence and the manner of doing the laundry.

Summary Scores

As Williams (1983) states:

"There seems to be an almost irresistible urge to assign scores to items in assessment protocols and then add them up." (p. 23).

The rationale is that, assuming that the items on the instrument consist of a systematic set of attributes of a single phenomenon (i.e. functional ability), a single score represents the overall status of the person.

While summary scores are often calculated, only a handful of scales provide much detail with respect to their calculation and interpretation. The Short Portable Mental Status Questionnaire (SPMSQ) (Pfeiffer, 1975) generates a

spread of scores from 0 to 10, based on correct responses. Adjusted for education and race, it is maintained that:

- 0 to 2 errors indicate intact intellectual function;
- 3 to 4 errors indicate mild intellectual impairment;
- 5 to 7 errors indicate moderate intellectual impairment;
and
- 8 to 10 errors indicate severe intellectual impairment.

The Performance Test of Activities of Daily Living (PADL) (Kuriansky et al, 1975) assigns individuals to three categories of self-care based on test results.

- Independent - completed all tasks without help;
- Moderate Dependent - score between 75% and 99%; and
- Dependent - score less than 75%.

For a few of the scales, the items are weighted. For example, the Modified Barthel Index (Granger et al, 1979) gives partial scores for performance with help and full scores for independent performance. Independent performance can be rated to a maximum of 15 depending on the activity. The Caro Functioning for Independent Living Scale (FIL) (Gross-Andrew and Zimmer, 1978) has 11 items which are scored according to the weightings assigned to them. The numeric value associated with the items increases as the individual's dependence increases. However, little information is provided on development or validity of the weightings.

In assessing needs for technical aids, a summary score is not required. Specific information on the areas of disability and need is far more useful.

Sensitivity of Scales

The ability of the scales to detect and measure differences in function (i.e. their sensitivity) varies a great deal. For instance, some scales like the

Functional Life Scale (Sarno, Sarno and Levita, 1973) and the Kenny Self-Care Evaluation Revised (Schoening and Iverson, 1965) do not differentiate between the assistance of humans or devices. Other scales, such as the Comprehensive Assessment and Referral Evaluation (CARE) (Gurland et al, 1977) and the Functional Capacity Evaluation (Jette and Deniston, 1978) are more sensitive and note which type of aid is utilized.

The sensitivity of the scales also varies in terms of the number of points on the scales. In general the more points on a scale, the more precise is the information collected.

Even more important than the number of points on a scale are the criteria used to scale ability. The vast majority of functional assessment tools involve the scaling ability in terms of the amount and type of assistance required to perform specific activities. Criteria such as speed, safety, self-confidence, and endurance are rarely used. In so far as they relate to needs which can be addressed by technological solutions these other criteria are important and should be considered. The scaling criteria used determines in part the types of needs which can be identified by the tool. If the amount of assistance required is the only rating criterion used to measure functional ability on a needs for technical aids assessment tool then only needs with respect to assistance required in performing activities will be identified. An individual who performs a tub transfer without assistance, but in an unsafe manner, would not be identified by such a tool as potential candidate for a tub seat or grab bars. In assessing the impact of a mobile rehabilitation clinic, Staisey (1984) found that aids and devices were more frequently prescribed to improve ease of movement/function and safety than to improve functional independence. This argues for the inclusion of safety and endurance or ease of performance ratings in an assessment tool aimed at identifying needs for technical aids.

Method of Administration

Available scales vary a great deal with respect to the qualifications required of the individuals administering them. Essentially, three types of

qualifications are observable: health professionals, trained interviewers, and no training.

A majority of the scales require the services of a health professional, such as a psychologist, psychiatrist, physician, social worker, nurse, etc. For example, the Functional Life Scale (Sarno, Sarno, Levita, 1973) requires a physician, psychologist or other health professional, and PAMIE (Physical and Mental Impairment of Function Evaluation) (Gurel, Linn and Linn, 1972) requires a nurse. While little is written concerning any additional training on the scale required of these health professionals, there does appear to be some variance between scales. For example, the Functional Assessment Inventory (Crewe, Athelstan and Meadows, 1975) requires 7 hours of training from its vocational rehabilitation counsellors, while the PGC Multilevel Assessment Instrument (Lawton, Moss, Fulcomer and Kleban, 1982) necessitates 3 days of intensive training from its health professionals.

A number of the scales, while not requiring health professionals, do require trained interviewers. These scales include the Function Status Index (Reynolds, Rushing and Miles, 1974), and the Rehabilitation Indicators (Diller, Fordyce and Jacobs, 1981). The training required to administer these scales also varies a great deal. For example, the Comprehensive Assessment and Referral Evaluation (CARE) (Kuriansky et al, 1976), which utilizes well-trained interviewers as well as nurses' aides, requires its interviewers to undergo some training and to partially memorize the questions so that they are presented with a natural intonation and an appropriately clinical manner. On the other hand, for the Rehabilitation Indicators (Diller, Fordyce and Jacobs, 1981), a one to two day training program is suggested as well as reference to a Training Manual.

Finally, some of the scales do not require any training to administer. This can result from two factors: either the scale is relatively easy for an interviewer to follow making training unnecessary or the scale is self-administered. There are a number of self-administered scales. The Chicago Activity and Attitude Inventory (Cavan, Burgess, Havighurst and

Goldhamer, 1949) asks respondents to select the most appropriate response, to agree or disagree with a statement, and to write prose answers to particular questions. Ferraro's Self-Ratings of Health Among the Old and the Old-Old (Ferraro, 1980) are measured with the following question: "Generally speaking, would you describe your present health as excellent (1), good (2), fair (3), or poor (4). A self-report versions of the Patient Evaluation Conference System (Jellinek) is also available.

Self-report measures of functional status have been found to provide reliable and valid information on functional ability (Jellinek, Torkelson and Harvey, 1982). Comparing self-report measures with clinician-assessed measures of functional ability (Kaufert et al, 1979) found close agreement. Agreement was greatest for less complex activities. Likewise, Moss et al (1975) have reported close agreement between an individual's self-reported functional status and a close relative's assessments of the individual's status.

Reliability and Validity

Scales used should be both reliable (that is, yield consistent stable measures) and valid (that is, measure what they are intended to measure). A reliable and valid scale is necessary to provide accurate information on needs for technical aids.

Reliability. Several types of reliability may be considered:

- test-retest reliability. Also referred to as intertemporal reliability, test-retest reliability concerns the stability of scores overtime. Test-retest reliability assesses the extent to which the measurement results fluctuate with the random daily changes of the individual or his environment. The measures should ideally reflect the person's general needs for aids and not be overly susceptible to minor fluctuations. Test-retest reliability can be determined by administering the scale or instrument on two occasions. Obviously the length of the interval between the successive administration affects

THE ADVANTAGES AND DISADVANTAGES OF DIFFERENT METHODS OF TESTING INTER-RATER RELIABILITY

METHOD	ADVANTAGES	DISADVANTAGES
1. Two or more interviewers administer instrument independently and results on items, scales, and global ratings are compared.	Enables comparison of the effects of interviewer differences (such as age, sex, personality, skill) on the responses elicited.	Impossible to distinguish whether incongruence is a result of interviewer or respondent factors. Respondent burden may affect data quality the second time. A selection bias is created by the limitation to respondents willing or able to have two tests.
2. Two or more interviewers are present; one conducts the interview and all record responses and make judgments.	Minimizes respondent burden. Tests ability of more than one interviewer to record items and make judgments congruently when stimulus is held constant.	Interviewer differences in eliciting responses will not be picked up. The group interview may inhibit responses.
3. The interview is video- or audio-taped. Additional interviewers record information and make ratings on the basis of the tape.	Same as no. 2 with the added advantage that many people can be involved in testing their inter-rater reliability. A tangible stimulus remains for use in trying to improve reliability.	Same as no. 2. Videotaping may be particularly obtrusive and introduces the element of the cameraman's focus. Audiotapes provide an incomplete record.
4. The interview is conducted with one or more observers behind a one-way mirror.	Same as nos. 2 and 3 but less obtrusive than group interviews or tapes.	Same as no. 2 but depends on interview taking place in a well-equipped office.
5. One interviewer administers battery, records data, and performs ratings. Additional interviewers use that recorded data to do their own ratings.	Minimizes respondent burden. Is less manpower intensive, making larger reliability samples possible.	Does not permit testing of inter-rater reliability in eliciting information or recording it.
6. Inter-rater reliability of parts of the instrument tested in sections. (This can be done in the method outlined in 1, 2, 3, or 4.)	Method is more convenient for interviewer and respondent.	Component parts of a battery may not behave the same way separately as they do when embedded in a longer instrument. Inter-rater reliability of summary scoring is more difficult to test.
7. Inter-rater reliability as established previously is accepted for component of the battery.	Minimizes startup time.	Same as no. 6. Also requires assumption that inter-rater reliability achieved with other subjects and other interviewers will pertain.

the level of reliability. If the interval is very short and the same person administers the scale on both occasions, the assessor's memory of the previous assessment may inflate the reliability. Likewise, on some tests of mental or cognitive status learning may occur, resulting in increased scores on re-test. If the interval is very long, patients may undergo real changes in terms of status and needs. Thus an intermediate length of interval, balancing these two concerns, is desirable.

- . inter-rater reliability. Inter-rater reliability refers to the consistency of scores obtained by different testers/interviewers/assessors. Kane and Kane (1981) consider inter-rater reliability at three levels of activity: 1) in eliciting information; 2) in the recording of responses; and 3) in making judgement summary ratings or drawing conclusions. The intensity of training clinical expertise and skills of the raters likely will affect inter-rater reliability on all of these levels. It should be noted that reliability statistics reported on most scales likely represent the optimal reliability that can be expected. The initial testing of these scales is often performed by highly trained, highly motivated staff in specialized geriatric units who have been involved in the development of the tool. Exhibit 2 (opposite page) provides a summary of the advantages and disadvantages of various methods of measuring test-retest reliability.
- . inter-item reliability. Inter-item reliability or internal consistency refers to the consistency of scores on items which purport to measure the same domain. This is typically assessed using statistical techniques such as the coefficient alpha.

Validity. In addition to the reliability of the measurement system, its validity must be established before it can be implemented and used with

confidence. Validity refers to the extent to which the tool measures what it is intended to measure. Two types of validity should be considered:

- content validity - The measures should cover the full scope of each domain. Content validity is typically assessed through the review of subject area experts.
- criterion-related validity - Criterion-related validity indicates the extent to which the measures obtained using the instrument or scale agree with another criterion measure. The criterion may be measured concurrently using another recognized measurement instrument or alternatively a predictive criterion may be used. For example, the PULSES Profile has been validated against the Barthel Index (Granger, 1979). Predictive validity in predicting mortality or institutionalized is sometimes used (Berkman, 1983). The criterion used should be appropriate to the use for which the instrument was designed.

There are many tools available which appear reliable and valid. However, none of these have been developed to determine need for technical aids and only a few have been developed and tested on non-institutionalized elderly.

Summary

In summary, none of the existing functional assessment tools reviewed meet the originally stated requirements for a tool to identify needs for technical aids or home modifications. Factors that limit the applicability of existing tools include:

- narrowness of measurement focus. Most scales measure functional ability only in terms of the assistance required to perform activities, and fail to consider safety, ease or endurance in

performing a task. Such scales would not be sensitive to important needs which technology can address such as safety.

- divergent purposes. None of the tools available were developed for the purpose of identifying needs for technological assistance. The purpose and intended uses of tools (e.g. description, placement selection, etc.) affect the scope and design of the assessment tool.
- failure to assess status and social supports in relation to functional abilities. Although several mental status assessment tools are available. These are stand-alone tools which in most cases are administered independent of the assessment of functional status. Likewise several social-support assessment tools are available but again the assessment is performed independent of consideration of functional needs.
- qualifications for administration. Most tools are designed to be administered by experienced professionals.
- reason for lack of ability not recorded. Few tools record reasons for lack of ability. Such reasons are important considerations in determining the potential applicability of technological assistance.
- failure to distinguish between ability and usual performance. Many of the tools do not clearly state whether ability or usual performance is to be assessed.
- focus on institutionalized populations. Many of the tools available have been developed and used primarily with the institutionalized elderly. They therefore emphasize the assessment of basic self care activities over more complex instrumental activities of daily living. This institutional focus also results in a tendency to assess functional status independent of any specific environment.

The fact that many reliable and valid functional assessment tools are available for other purposes, suggests the feasibility of developing a reliable and valid tool for technical aids needs identification.

IV ASSESSING THE HOME ENVIRONMENT

The assessment of the home environment is critical to the determination of needs and the selection of an appropriate approach to addressing these needs. As noted earlier the functional status of a person cannot and should not be considered in isolation from his/her home and community environment. It is the fit between the person and their environment which to a large extent determines needs. Likewise, this fit of person and environment should be considered in the selection of appropriate aids or home modifications to address identified needs.

Importance of the Environment

In general, the elderly spend the majority of their time at home, inside their residence. Moss and Lawton (1982) found that the elderly spend approximately 75% of their time in their homes. Life satisfaction among the elderly has been found to be related to housing characteristics (Lawton and Nahemow, 1979; Windley, 1982) and functional performance is also strongly related to an individual's environment.

As noted earlier, given a person's level of impairment, his/her ability to perform functional activities is largely determined by the environment in which he/she lives. This has been illustrated by Rintala et al (1980) who report large changes in the scores of wheelchair-bound spinal cord injury clients on a scale of environmental negotiability when they change residence. They found that the environment negotiability score of a client moving from a traditional apartment to a specially designed wheel-chair accessible unit increased by 43%.

Human vs. Physical Environment

The environment of an elderly person can be described in both physical and human terms. Assessment of the human aspects of a person's environment,

including social supports, social contacts and networks, have been discussed under the social status section on functional assessment. The focus in this chapter is on the assessment of the physical environment in relationship to the activities and functional abilities of the individual.

Theories of Person-Environment Fit

Several theoretical models of person-environment fit have been developed to explain and describe characteristics of the interaction between the individual and features of the environment in determining levels of disability and well-being. Models of person-environment fit or congruence for the elderly have been proposed by Carp (1968), Lawton and Nahemow (1979), Lawton (1975), Kahana (1975) and Schooler (1976). These derive in part from earlier work of social-psychologists such as Lewin (1951), Barker (1968) and Wicker (1972).

Most work in geriatrics on person-environment congruence has centered on institutional environments such as nursing homes. According to these models, satisfaction, well-being and adjustment depend on the congruence and match between the elderly persons' needs and preferences and the social and physical attributes and resources of the environment. The environment is assumed to become increasingly important in this interaction as the individual ages. Lawton and Nahemow (1979) conceptualize person-environment fit in terms of an interaction between the "competence" (i.e. functional abilities with respect to physical health, cognition, social/emotional needs) of the individual and the "press" of the environment (i.e. stress or environmental demands) on the individual. The greater the competence of the individual, the greater is his/her ability to adapt and respond positively to environment press. As competence generally decreases with age, the effects of environmental press impact more greatly on the elderly. If environmental press is greater than the individual's level of competence, maladaptive behavior results. Kahana's model (1974) similarly asserts that when the environmental opportunities in areas such as stimulation and privacy match the needs and preferences of the individual, well-being will result. In addition, Kahana's model suggests that individuals naturally seek out environments which are congruent with their

needs, although factors such as financial ability, availability and mobility may moderate this tendency.

These models provide a conceptual framework for the measurement of functional ability of the elderly in relation to their environment.

Instruments for the Assessment of the Home Environment

In comparison with the number and range of instruments available to assess functional status, there are relatively few existing instruments for the assessment of the home environment.

Much research has been conducted on the housing needs of the elderly, utilizing instruments to assess the environment in terms of architectural barriers (Central Housing and Mortgage Corporation, 1972), physical layout (Lawton and Nahemow 1979) or safety. These studies have focussed on determining the generic housing needs of the elderly, as opposed to the specific needs of individual elderly people. Such studies have contributed to the design of specialized housing developments for the elderly and the determination of the number of such units needed in a given community. However, the scales utilized in these studies are not directly applicable to the purpose of assessing needs for technical aids at a client level.

Research on person-environment fit has stimulated the development of several environmental assessment scales. A number of scales have been developed by Moos which assess the social environment in terms of relationship dimensions, personal growth/goal orientation dimensions and system maintenance/system change dimensions (Moos, 1979). Environment-specific instruments have been developed for ward atmosphere (Moos, 1974), correctional institutions (Moos, 1974), group environments (Moos and Humphrey, 1973), and family environments (Moos, 1974). While none of these scales is appropriate for the assessment of the home environments of the non-institutionalized elderly, they do provide a useful model for the development of such a scale for this population.

KAHANA'S DIMENSIONS OF CONGRUENCE*

DIMENSION	ENVIRONMENT	INDIVIDUAL
1. Segregate Dimension	A. Homogeneity of composition of environment. Segregation based on similarity of resident characteristics (sex, age, physical functioning and mental status). B. Change vs. sameness. Presence of daily and other routines, frequency of changes in staff and other environmental characteristics. C. Continuity or similarity with previous environment of resident.	A. Preference for homogeneity, i.e., for associating with like individuals. Being with people similar to yourself. B. Preference for change vs. sameness in daily routines, activities. C. Need for continuity with the past.
2. Congregate Dimension	A. Extent to which privacy is available in setting. B. Collective vs. individual treatment. The extent to which residents are treated alike. Availability of choices of food, clothing, etc. Opportunity to express unique individual characteristics. C. The extent to which residents do things alone or with others.	A. Need for privacy. B. Need for individual expression and idiosyncrasy. Choosing individualized treatment whether that treatment is socially defined as "good" treatment or not. C. Preference for doing things alone vs. with others.
3. Institutional Control	A. Control over behaviour and resources. The extent to which staff exercise control over resources. B. Amount of deviance tolerated. Sanctions for deviance. C. Degree to which dependency is encouraged and dependency needs are met.	A. Preference for (individual) autonomy vs. for being controlled. B. Need to conform. C. Dependence on others. Seek-support, nurturance vs. feeling self-sufficient.
4. Structure	A. Ambiguity vs. specification of expectations. Role ambiguity or role clarity, e.g., rules learned from other residents. B. Order vs. disorder.	A. Tolerance of ambiguity vs. need for structure. B. Need for order and organization.
5. Stimulation-Engagement	A. Environment input (stimulus properties of physical and social environment); (not only availability of stimulation even to which that is directed to resident). B. The extent to which resident is actually stimulated and encouraged to be active.	A. Tolerances and preference for environmental stimulation. B. Preference for activities vs. disengagement.
6. Affect	A. Tolerance for or encouragement of affective expression. Provision of ritualized show of emotion (e.g., funerals). B. Amount of affective stimulation. Excitement vs. peacefulness in environment.	A. Need for emotional expression--display of feelings, whether positive or negative. B. Intensity of affect, e.g., need for vs. avoidance of conflict and excitement (shallow affect).
7. Impulse Control	A. Acceptance of impulse life vs. sanctions against it. The extent to which the environment gratifies needs immediately vs. postponed need gratification. Gratification/deprivation ratio. B. Tolerance of motor expression--restlessness, walking around in activities or at night. C. Premium placed by environment on level-headedness and deliberation.	A. Ability to delay need gratification. Preference for immediate vs. delayed reward. Degree of impulse need. B. Motor control; psychomotor inhibition. C. Impulsive closure vs. deliberate closure.

*Taken from Schooler, K.K. Environmental change and the elderly. In I. Altman and J.F. Wohlwill (Eds.), Human behavior and environment: Advances in theory and research. Vol.1. New York: Plenum Press, 1976.

Kahana has developed and utilized a measure of person-environment fit based on measures of congruence between individual preferences and environmental characteristics on seven dimensions of congruence (see Exhibit 3 opposite page). However, detailed descriptions of the measurement approach utilized are not provided (Kahana, 1974).

Informal assessment forms and environmental checklists are used by many professionals who provide therapeutic or support services to elderly people in the community. These usually assess accessibility in terms of entry to the home, and use of the kitchen and bathroom.

The Environmental Negotiability Survey (Norris-Baker and Willems, 1979) provides a comprehensive standard assessment of accessibility and negotiability. This instrument developed for use with physically disabled, has been most frequently used in research on the rehabilitation an adaption of wheelchair bound individuals with spinal cord injuries (Norris-Baker, Stephens and Willems, 1982). It is currently being adapted to assess the home environments of older individuals who have experienced strokes (personal communication, Norris-Baker, 1986) and could be modified for use with a general elderly population.

The Environmental Negotiability Survey (ENS) is designed to quantify the extent to which an individual can use his environment and monitor this capability over time. It is part of the Longitudinal Functional Assessment Inventory (Rintala, et al, 1980). Based on the ecological models of Altman (1973), Proshansky (1976), and Willems (1976, 1977), the ENS focusses on the measurement of behavior-environment units. Thus, negotiability is measured in terms of the person's ability to use objects in his environment.

The survey is divided into two phases. In phase 1, an environmental inventory is conducted to describe and catalog the home environment:

" The rater lists all the objects in the person's home which are visible, established pieces of the environment and which

require some kind of behavior in their use. The rater does not include objects which might be classified as personal props of the client or his or her family. The list includes any elements which might limit mobility and the person's access to other objects in the home. Rugs, Floor surfaces, and transitional elements such as doors or steps are examples. Items are catalogued individually and the location of each is noted on a floor plan of the home. Raters inventory all important areas of the home, omitting only the bedrooms of other family members." (Rintala and Willems, 1979, p.2)

In the second phase, the negotiability assessment is conducted:

"The rater and the disabled person tour the home together, and the rater makes a yes-no decision about negotiability for every object of the inventory. The rater makes these decisions on the basis of the person's behavioral demonstration and verbal reports. Negotiability is assessed for each object in global terms -- whether or not the person can, with only his usual assistive equipment, use the object independently for its normal purpose." (Rintala and Willems, 1979, p.3).

The proportion of objects which are negotiable is used as a summary score of environmental negotiability. The validity of this measure is suggested by its sensitivity to changes in the living environments of clients. Inter-rater reliability data indicates mean percentage agreement for pooled inventories of 89.8%; and mean agreements of raters with a standard negotiability assessment of 97.5% (Norris-Baker and Willems, 1979). Experienced and inexperienced raters were compared and experience was found to have no effect on reliability. However it should be noted that the inter-rater reliability data was based on multiple raters completing the instrument on only 9 clients.

While this measurement approach provides reliable detailed data on an individual's ability to negotiate and control his environment, to be useful in determining needs for technical aids, this many object-client interaction units would need to be organized into basic activity or task groups (e.g. bathing, cooking, etc).

Another approach to assessing the home environment in relation to the individual has been developed by Kiyak, Small and Sumitani (1985), conducting a

A SAMPLE PAGE FROM THE ENVIRONMENT ASSESSMENT
OF KIYAK, SMALL AND SUMITANI*

19. Are there any elements or features about any light fixtures or switches in the home with which Mr/Ms__ previously had no difficulty, but now has difficulty using, needs assistance, or no longer uses because of difficulties?

YES: _____ NO: _____ (GO TO QUESTION #20)

ITEM/DIFFICULTY	SPECIFY IF PROBLEM IS COGNITIVE, SENSORY, MOTOR, OTHER
-----------------	---

1:	_____	_____
2:	_____	_____
3:	_____	_____

What, if any, measures have you tried to help Mr./Ms. __ maintain or help with activity or alleviate difficulty?

NONE: _____

	WORKED?
	YES NO

1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____

IF NONE TRIED, OR MEASURES DID NOT WORK, has activity been abandoned?

Yes _____ No _____ (IF No, Has someone else taken over activity? EXPLAIN:

*Kiyak, H.A., Small, R., Sumitani, M. (1985). Adaptation To Person-Environment Incongruence By Elderly With Alzheimer's Disease. (Research Supported By Grant No. AG-04070 From The National Institute On Aging). Paper Presented At Meetings Of The Gerontological Society of America, New Orleans, November 1985.

longitudinal study of person-environment interaction among older persons with Alzheimer's disease. Three primary domains of person-environment are assessed: cognitive functioning (orientation, memory and abstraction) physical functioning (motor function, sensory function and manual dexterity) and needs and preferences (for order/effort, activity/stimulation, physical privacy, solitude; control, safety/security, and affiliation). There are 11 sections to the Environmental Assessment:

- . description of dwelling;
- . neighborhood and community;
- . subjects personal interests;
- . personalization of home;
- . opportunities for solitude/privacy;
- . ADL, equipment, and furnishings;
- . accidents;
- . special measures, features, devices to assist the subject;
- . interior rooms, furniture and equipment;
- . yard and dwelling exterior; and
- . descriptive assessment of subject home.

Each item on the environmental assessment is linked to an aspect of measurement on the person dimensions. A unique feature of this tool is the sequential approach used in examining problem areas of ADL. A sample page of the environmental assessment is provided in Exhibit 4 (opposite page). The first question screens for any problems in the activity/environmental area of light switches. If there are none, no further questions are asked. This is in contrast to the Environmental Negotiability Survey which would list all lights in the home and then require a yes/no response for each concerning the person's ability to use them -- a tedious exercise if the individual is independent in most areas. Kiyak's Environmental Assessment also provides for the recording

of the specific items which pose problems, reasons for the difficulty, approaches which have been tried to solve the problem, and whether the activity has been abandoned or taken over by someone else. All of this information is useful in identifying needs for technical aids.

The assessment of functional ability in ADL and IADL (as opposed to general assessment of the person's manual dexterity, motor and sensory function) is conducted as part of the environmental assessment. The format of questions is identical to that in Exhibit 4. One shortcoming of this portion of the assessment is the failure to provide a comprehensive listing of tasks to consider in each activity area assessed. The Skills Indicators List of Brown (1984) provides a comprehensive list of tasks or component skills for functional activities such as those used in the environmental assessment. These could be used in conjunction with the Environmental Assessment to correct this deficiency.

Summary

In summary, the assessment approach of the Environmental Assessment tool of Kiyak et al (1985) provides a useful model for the assessment task of identifying needs for technological assistance of aids, devices or home modifications. Advantages of this tool include:

- . assessment of the environment in relation to the individual's functional ability;
- . provision of scales of safety and usual performance;
- . assessment of functional ability in relation to the home environment;
- . organization of questions around activity/environment categories;
- . use of skip logic and sequential questions to avoid repetition of questions on areas of ability; and
- . recording of detail on specific tasks which pose problems, reasons for lack of ability, and availability and provision of assistance.

Several features of the tool limit its direct applicability for assessing needs for technical aids and home modification. These include:

- . emphasis on the assessment of activities and environmental features of particular concern for individuals with Alzheimer's disease;
- . lack of compatibility with ABLEDATA activity/environment categories;
- . lack of provision for coding of details on tasks which pose problems;
- . failure to provide comprehensive task lists for activity categories; and
- . lack of information on the reliability and validity of the tool.

Major modifications of the tool would be required to address these shortcomings, but would provide an assessment tool well suited to the purpose of identifying needs for technological assistance.

V ASSESSING ATTITUDES, BELIEFS AND EXPERIENCES REGARDING TECHNICAL AIDS

A final assessment area of importance in identifying needs for and prescribing of appropriate technical aids and devices concerns the attitudes and beliefs of the individual regarding such aids, and previous experiences with aids and devices. The assessment of attitudes, beliefs and experiences is of value in so far as such factors are related to acceptance and use of technological assistance.

The existence of a relationship between attitudes and behaviour such as device use has been a much debated issue in psychology. Literature reviews have reached differing conclusions regarding the existence of a relationship between attitude and behaviour. A series of reviews during the 1960's concluded that little or no relationship exists between attitude and behaviour (McGuire, 1966; Sherif, Sherif & Nebergal, 1965; Wicker, 1969). More recent reviews have concluded that a significant relationship exists between attitude and behaviour (Ajzen & Fishbein, 1977; Samuel & Johnson, 1976; Alwin, 1973).

Early work in the area has been criticized for the use of unreliable measures (Alwin, 1973), the temporal instability of some attitudes (Schwartz, 1978), the use of single-act criterion measures of behaviour, (Bem & Allen, 1974), and the measurement of attitudes and behaviours at different levels of specificity (Fishbein & Ajzen, 1974).

Before describing the potential uses of information concerning the individual's beliefs and attitudes, the meaning of these terms should be clarified. Fishbein (1978) offers the following definitions:

"A belief is a probability judgement that links some object or concept to some attribute. The terms "object" and "attribute" are used in a generic sense and both terms may refer to any discriminatable aspect of an individual's world. An attitude is a bipolar evaluative judgement of the object. It is essentially a subjective judgement that I like or dislike the object, that it is good or bad, that I'm favourable or unfavourable toward it (page 378)."

Potential Uses

Attitudes, beliefs and experiences may: 1) guide decisions concerning whether a technical aid or some other form of assistance is desirable; 2) assist in the selection of an appropriate aid or modification; and 3) identify individuals who are unlikely to use or comply with instructions concerning a technical device.

Often, identified needs, such as assistance in meal preparation, can be addressed in several ways (e.g., structural modifications to the kitchen, provision of technical or provision of "meals on wheels" service). Knowledge of the preferences, attitudes, and beliefs of the individuals may assist in identifying the best option. For example, if independence and control are important to the person, kitchen modifications or the use of aids may be appropriate. Likewise, alternative aids and devices are often available. Knowledge of the individual's attitudes such as fear of new technology or beliefs that use of an aid embarrasses others can assist in selecting an appropriate aid.

Finally, attitudes and beliefs may be useful in identifying individuals who are at risk of not complying with device use. These individuals may then be targetted for additional training in device use or special interventions aimed at ensuring that equipment provided will be used safely and to their advantage. Alternatively, such individuals may be targetted for non-technical aid solutions to their needs. This is a consideration when very expensive or scarce devices are being considered.

Measuring Beliefs and Attitudes

Attitudes and beliefs may be measured using any of several different approaches. The measurement procedures used may employ standard scaling procedures, psychological measures, behavioural measures, unobtrusive measures, or disguised scaling techniques such as Hammond's error-choice technique (1948) or Cook's plausibility technique (Brigham & Cook, 1970).

Probably the most common approach is to use a question format and a standard scaling procedure such as a Likert scale, Guttman scale, Thurstone's equal-appearing internal scale, or semantic differential scale to measure attitudes. All of these procedures result in a bipolar evaluation of an object or issue. Fishbein and Ajzen (1975) provide a detailed description and comparison of these procedures.

Physiological measures such as galvanic skin response, pupillary response, and heart rate have been used to measure attitudes. However, these physiological responses are more indicative of general arousal level than of an evaluative response (Woodmansee, 1970), and would clearly not be practical as part of an assessment protocol administered by a lay person in the home of an elderly individual.

Behavioural or unobtrusive measures may also be used to assess attitudes, but these techniques become unwieldy when a number of diverse attitudes are to be measured.

"Disguised" scaling techniques have also been employed. For example, instead of being told that his/her attitudes are being measured, an individual may be asked to respond to a questionnaire as he/she thinks most other people would. The assumption is that people tend to project their attitudes and beliefs onto others. These techniques are reviewed by Kidder and Campbell (1970). The aim of a disguised scaling technique is to avoid distortions on the part of the individual. However, there is little indication that these disguised measures are more valid than nondisguised measurement techniques.

Another factor to consider in measuring attitudes is the number of items or responses used to measure a specific attitude or belief. Nunnally and Durham (1975) describe three main reasons for using multi-item as opposed to single item measures. These are: 1) single items tend to be highly specific and have low correlations with the attribute being measured; 2) single items are restricted in the number of levels of the attribute which can be distinguished (For example, a single item five-point Likert scale can at most distinguish

between five levels of the attribute, while finer differentiations are possible when multiple items are used); and 3) individual items are less reliable (i.e., have greater measurement error) than multi-item measures. Although multi-item measures are desirable, when several different attitudes or beliefs are being assessed, multi-item measures of each may result in a very long questionnaire.

The level of specificity of the attitude or belief should also be considered. Fishbein and Ajzen (1974) have attributed the low correlations between attitudes and behavior reported in some studies to a lack of correspondence between the level of specificity at which relevant attitudes are measured and the level of specificity of the outcome behavioral measure. According to this view, attitudes towards technical aids should show a stronger relationship to compliance with the use of such aids than more general health attitudes.

In summary, although a variety of measurement procedures are available for the assessment of attitudes, a questionnaire using multi-item measures of attitudes specific to technical aids is both feasible and desirable. Such an instrument is not currently available.

Although there are no standardized scales of attitudes towards technical aids, there are several health attitudes scales. Those most relevant to compliance are the Lau and Ware Multidimensional Health Locus of Control Scale (MHLOC) (Lau & Ware, 1981) and the Wallston Health Locus of Control (HLC) Scale (Wallston, Wallston, Kaplan & Maides, 1976). The Wallston HLC scale classifies subjects as either internal or external in their beliefs regarding locus of control of health, while the Lau and Ware MHLOC yields separate scores for more specific sub-categories: belief in provider control of health outcomes, belief in self control of health outcomes, and belief in chance health outcomes. The Lau and Ware MHLOC provides a standardized measurement scale of general expectancies regarding health care. The MHLOC is reported to have test-retest and internal consistency reliability (Lau and Ware, 1981). Factor analyses have confirmed the construct validity of the MHLOC subscales (Lau & Ware, 1981; Lau, 1982). The predictive validity of the subscales has also been examined. For patients who value health, belief in self-control of health has been found

to have a strong positive correlation with self-care behaviors; belief in provider control over health is positively correlated with regular attendance at medical check-ups; and belief in chance health outcomes is not correlated with self-care or medical check-up behaviors (Lau, 1982).

The needs and preferences scale of the Kiyak et al (1985) assessment instrument measures general attitudes towards the home environment. These may provide guidance in the selection of alternative solutions to problems with functional abilities. Reliability data is not yet available on this scale.

Summary

Thus, the MHLOC subscales may provide a measure of general health expectancies useful in the prediction of compliance, and the needs and preferences scale may provide general information on environmental preferences. However, beliefs and attitudes specific to aids and devices should also be considered and may be more strongly associated with compliance in device use and more useful in identifying needs for technical aids. Assessment tools to measure beliefs and attitudes specific to aids, devices and home modifications are not currently available. As noted earlier, an attitude assessment tool would be of potential value in identifying individuals who accept and use technological assistance and in guiding the selection and prescription of aids and modifications. Such a tool could be developed as part of an assessment tool for needs identification and refined based on information concerning device acceptance and use.

VI CONCLUSIONS

In the previous chapters, existing tools for the assessment of functional status, the home environment and attitudes of the elderly were reviewed. The purpose of this review is to provide guidance in the selection and or development of an assessment instrument to identify functional disabilities and home environment barriers that are amenable to technological solutions. Of the various existing instruments reviewed, none are designed to identify needs for technical aids, and none can be used without modification for this purpose.

Recommendations

Given the lack of appropriate existing tools, then, if it is decided that the Ministry wishes to proceed with the development of an assessment tool, it is recommended that:

1. A functional status scale be developed to assess an individual's ability, safety and ease in performing activities in the home environment. This tool should:
 - . be organized around major functional activity/ability categories compatible with those used in the ABLEDATA database;
 - . include an exhaustive listing of component skills for each activity/ability category as contained in the Skills Indicators List (Brown, 1984);
 - . incorporate appropriate skip logics and a sequential questioning approach similar to that used in the ADL portions of the Environmental Assessment of Kiyak et al. (1985); and
 - . include measurement of ability, usual performance, reason for disability and importance placed on performance in each activity/ability category.

2. An environmental assessment tool that assesses structural barriers in the home be developed through the expansion and modification of portions of the Environmental Assessment of Kiyak et al. (1985).

Specifically the assessment should be organized around architectural elements compatible with the categorization used in ABLEDATA.

3. A multidimensional attitudinal scale should be developed to measure specific attitudes towards technical aids and to measure perceived needs and preferences. This would initially be an experimental tool, which could be refined based on information on the acceptance and use of devices, and modifications provided.

Guidelines for Modification and Development of the Instrument

To guide the modification and development of an instrument that will be useful in assessing needs for technical aids and home modifications and that can be practically and effectively implemented, design criteria for the instrument, suggested research stages, and staffing requirements for the project are provided below.

Criteria

The following design criteria or specifications for the instrument provide a description of key characteristics of the tool to be developed. These are that the tool:

- . assess both functional ability and usual performance in the home environment;
- . assess structural barriers in the home environment;
- . assess attitudes and beliefs which may be related to acceptance and use of technical aids;

- . organize the functional and environmental assessment around activity categories and environment elements compatible with those used in ABLEDATA;
- . be modular so that specific sections can be used with targetted populations (e.g. blind, wheelchair bound, etc.);
- . contain skip logic/sequential questions to avoid multiple questions concerning activity/environment areas which pose no problems for the individual;
- . be capable of being administered by lay people, with minimal training; and
- . for areas of apparent disability, identify reasons for limitations of ability, importance placed on the activities and how and whether assistance is currently provided.

Staging of the Tool Development

The following tasks provide an outline of the stages involved in the development of an assessment tool to meet the above criteria:

1. Review criteria for the instrument, suggested tools for modification and ABLEDATA structure.
2. Develop general assessment categories of individual attributes (e.g. sensation, orientation, etc.), functional activities (e.g. dressing, meal preparation), and architectural elements (e.g. doors, lighting, steps, etc.) that are compatible with those of ABLEDATA.

3. Develop comprehensive component task lists such as those developed by Brown (1984) for each assessment category.
4. Design measurement scales of assistance, safety and ease/endurance.
5. Design measurement scales and recording format for assessing in areas of disability presence and type of assistance provided, importance of the activity and reasons for lack of ability.
6. Develop list of relevant attitudes, beliefs, experiences, and preferences to be measured by attitude questionnaire.
7. Develop scales to measure relevant attitudes, beliefs, and preferences.
8. Compile and organize the complete instrument.
9. Pre-pilot test on a small sample of non-institutionalized elderly to correct any obvious problems with the tool.
10. Develop instruction manual and guidelines for administering the instrument, coding manual, and training materials.
11. Design pilot test methodology.
12. Design methodology for assessing reliability and validity during pilot test.
13. Conduct pilot test.
14. Analyze results.
15. Review instrument.

A project of this scope would require at least 18 months to complete and would require a sizeable sample size.

Staffing Requirements

Research to develop the assessment tool requires a staff team which includes individuals with post graduate training in measurement and scaling (preferably at the doctoral level) and clinical expertise in occupational therapy or a related area. The team should possess the following skills:

- . experience in functional assessment techniques and knowledge of the available tools;
- . experience in attitude measurement;
- . clinical experience with the elderly;
- . understanding of technological solutions for the elderly and disabled;
- . expertise in scaling techniques, and measurement development;
- . statistical and methodological skills in the design of reliability/validity studies;
- . experience in conducting large surveys; and
- . familiarity with the ABLEDATA data base and requirements for computerization of data collected.

In conclusion, there is a great potential for technology to contribute to the maintenance of elderly individuals in the community through improvement of their functional abilities and quality of life. In order for this to occur, a cost-efficient method of identifying an individual's needs for technical aids and prescribing technological solutions to these needs is required. The development of an effective assessment tool is the first step towards realizing this potential. A comprehensive tool specifically aimed at the assessment of needs for technical aids, devices and home modifications, and compatible with the ABLEDATA data base on such technology would provide an efficient and effective assessment approach, which is adaptable to rapid changes in the technology available.

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MINISTRY OF COMMUNITY AND SOCIAL SERVICES

ANNOTATED BIBLIOGRAPHY OF FUNCTIONAL ABILITY
AND HOME ENVIRONMENT ASSESSMENT PROTOCOLS

APRIL 1986

MINISTRY OF COMMUNITY AND SOCIAL SERVICES
ANNOTATED BIBLIOGRAPHY OF FUNCTIONAL ABILITY AND HOME
ENVIRONMENT ASSESSMENT PROTOCOLS

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INTRODUCTION

This report presents an Annotated Bibliography of existing functional status and environmental assessment instruments. It is the first phase of the review process to identify or develop a protocol that can be used to identify needs of elderly persons that are amenable to technological assistance and that:

- . assesses the functional ability of older persons;
- . assesses the experience, satisfaction, or acceptance of older persons with technical aids or assistive devices;
and
- . assesses the home environments of older persons.

The Annotated Bibliography provides detail on 33 specific assessment tools. It is a companion to the review paper "A Review of Functional Ability and Home Environment Assessment Protocols" (1986) which provides a synthesis and critique of the tools in general.

As mentioned the focus of the bibliography is on functional ability assessment and environmental assessment tools. However, since there are many functional assessment tools but relatively few environmental assessment tools, the majority of the bibliography's instruments are functional assessment tools. In addition, we have included examples of tools covering other areas of functioning such as social networks and morale which may affect the needs of the elderly for assistive devices or technical aids.

While the Annotated Bibliography focusses on tools which are applicable for community living elderly persons, tools which were originally developed for rehabilitation populations, specific diagnostic groups, the disabled or institutional settings are also included. Such tools may be adapted for or applied to community living elderly.

The Annotated Bibliography is organized into two parts. In the first section are summary tables of the 33 instruments appearing in the bibliography. The

summary tables provide point form descriptions of the essential elements of the tools. Included in each table are:

- . title;
- . author(s);
- . year(s);
- . domain;
- . rating format;
- . rater;
- . number of items;
- . applications;
- . reliability; and
- . validity;

The second section consists of a review of each of the instruments. As mentioned, there are thirty-three instruments, which are reviewed in alphabetical order. Included in each of the reviews are the following information:

- . domain;
- . purpose;
- . measurement approach;
- . rating scale (including an example from the instrument);
- . information on reliability/validity and standardization; and
- . references.

An asterisk in the references refers to the source for a particular tool.

SECTION 1: SUMMARY CHARTS OF
FUNCTIONAL ABILITY AND HOME
ENVIRONMENT ASSESSMENT PROTOCOLS

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Marthel Index	Mahoney and Marthel	1965	ADL	partial scores for performing with help; full score for independent performance; items weighted with maximum ratings of 0, 5, 10 or 15; scale ranges from 0 to 100.	rehabilitation centre staff, nurse	10	• classification for placement • used for assessing and describing medical rehabilitation outcomes • measures degree of severity of physical handicap		X
Marthel Index Modified	Granger, Albrecht, Byron and Hamilton	1977	self-care, sphincter-control, and mobility	scores range from 0 to 100; the higher the score the more independent a person can perform activities. Scale divided into 2 groups: Independent which includes intact and limited; and dependent which consists of helper and null.	rehabilitation centre staff	15	• measures of degree of functional independence in basic activities of daily living for clinical and research purposes • classification for placement • assist in planning personnel requirements in a home-based service delivery program	X	X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Care Functioning for Independent Living Scale (FIL)	Gross-Andrew and Zimmer	1978	vision, hearing and speech, mobility, bowel and bladder control, confusion, knowledge of self, ability to understand, wandering, extent of nonconventional behaviour	Items are weighted; 47 is the highest total possible score and it reflects maximum disability	professional	11	• measurement of disabilities of the aged for placement and care planning		
Chicago Activity and Attitude Inventory	Cavan, Burgess, Havighurst and Goldhamer	1949	subject's behaviour in health, friendship and family contacts, leisure-time use, economic security and religion measures personal adjustment collects information regarding attitudes and satisfaction with each major field of activity	check lists; yes/no; prose answers to questions	self	110	• General research tool on the problems of older people • individual diagnosis in counselling • clarification for placement	X	X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Comprehensive Assessment and Referral Evaluation (CARE)	Gurland, Kurlansky, Sharpe, Simon, Stiller and Birkett	1977	psychiatric, medical, nutritional, economic and social problems	semi-structured interview guide and an inventory of defined ratings	well-trained interviewers	862 defined items	• measurement of changes in symptoms, complaints, and functioning over time	X	X
Cumulative Illness Rating Scale	Linn, Linn, Gurel	1968	physical impairment	5-point scale 0 none 1 mild 2 moderate 3 severe 4 extremely severe	health professionals	13	• measurement of overall health of the elderly; • amount of lifetime bodily impairment; and • current severity of impairment.	X	X
Functional Assessment Inventory	Crave and Athelstan	1979	physical condition, motor functioning, cognition, communication, vocational qualifications, vision and adaptive behaviour	4-point scale	rehabilitation counsellor	30	• evaluation of the functional limitations imposed by disability and impact on vocational prospects • classification for treatment planning	X	X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Functional Capacity Evaluation	Jette and Deniston	1978 1980	dependence, pain and difficulty	ADL items rated on a 5-point scale; pain and difficulty items rated on a 4-point scale	physical therapists	45	• assessment of functional capacity of non-institutionalized individuals for clinical and research purposes	X	
Functional Life Scale (FLS)	Sarno, Sarno and Levita	1973	cognitive functioning, activities of daily living (indoors and outdoors), and social interaction	a 5-point scale on 4 areas for each item	a broad physician, psychologist, specialized nurse's aide	44	• Quantitative measurement of ability to participate in all of the basic daily activities to evaluate outcome of rehabilitation programs	X	X
Function Status Index	Reynolds, Rushing and Miles	1974	activity, mobility and movement	4 dimension, using either a 4 or 5-point scale	trained interviewer	16	• effectiveness measure for evaluation of different health-care delivery systems		X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Geriatric Functional Rating Scale	Grauer and Birnbaum	1975	autonomy, physical, mental, and social status	7 groups (physical condition, mental condition) are rated with impairments for negative scores. The other 5 groups are all rated and given positive scores	social worker, nurse	30	• determination of need for institutional care and assist in choice of the appropriate institutional setting		X
Granger Range of Motion	Granger	1977	specific body motions - with shoulders, elbows, wrists, fingers, thumbs, hips, knees, and ankles	• nominal scale • each item classified as - against resistance - without resistance - in passive motion only - in combination of active and passive motion	patient demonstrators, staff rates	32	• provides a standard measurement tool for range of motion		
Katz Index of ADL	Katz, Ford, Moskowitz, Jackson and Jaffee/ Katz, Downs, Cash and Grotz	1963 1970	activities of daily living, degree of autonomy and dependency	ordinal rating scale of 6 ADL functions	psychologist, physician, social worker	6	• used in research as outcome measure and to document clinical course	X	X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Kenny Self-Care Revised	Schoening and Iversen	1968	bed activities, transfers, locomotion, personal hygiene, dressing and feeding	- items rated on a 5-point scale - each item's score is divided by the number of sub-items in order to give each item equal weighting	health professionals	6 categories	assessment of physical capacity to function at home or within other closed environments for clinical and research purposes		X
Klein-Bell ADL Scale	Klein and Bell	1982	activities of daily living (dressing, mobility, elimination, bathing/hygiene, eating, and emergency telephone use)	- rated as "achieved" or "failed"; - items weighted between 0 and 3.	registered nurses, occupational therapists, physiotherapists	170 items	measurement of activities of daily living and functional status for clinical and research purposes	X	X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Longitudinal Functional Assessment Inventory	Mintala, Alexander, Wilkens and Malscend	1980	Independence, mobility, hours out of bed, overall activity level, family involvement and ward activity level	4 scales: - direct observation; - interview; - instrumental measures; - environmental negativity survey	health professionals or trained observers/interviewers and self-report	215 variables	- to assess the status of clients and their program over time and in different settings - to assist the rehabilitation system to develop a more scientific foundation and become more cost-effective	X	X
Mental Status Questionnaire	Kahn, Goldfarb, Pollack and Peck	1960	orientation, memory, calculation, and general personal information	Individuals were grouped into one of 3 groups: Group 1 - persons making 0-2 errors; Group 2 - persons making 3-6 errors; Group 3 - persons making 9-10 errors.	psychologist	10 questions	quantitative measurement of mental functioning related to cerebral impairment for clinical and research purposes	X	X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
OARS Questionnaire	Duke University	1975	physical health, mental health, activities of daily living, instrumental activities of daily living, socio-economic resources	5 domains - Judgment on the functional status of each domain using a 6-point scale (ranging from 1 = excellent functioning to 6 = totally impaired)	physician, psychiatrist, social worker, investigator, self	105	- used clinically and in research - assess functional capacity in 5 dimensions and to measure use of and need for 24 types of general services	X	X
PAGE II - Patient Care Management (PCM)	United States DHEW	1976	medical, psychosocial factors	The PCM is a patient-planning tool rather than an instrument that establishes a score	health professional		comprehensive assessment of the physical health of nursing home patients for treatment planning		

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
(PAMIE) Physical and Mental Impairment-of-Function Evaluation	Curel, Linn and Linn	1972	physical disability, mental deterioration	check list of yes/no, based on behaviour during the previous week	nurse	77	assessment of physical and mental status for screening, and/or placement		X
Patient Evaluation Conference System (PECS)	Harvey and Jellinek	1981	medical, functional, communication, vocational and social status	eight point scale. The use of assistive devices is considered in the scale categories. Objective definitions of performance are provided for each rating category. Both present status and expected outcome on goal status are scored.	health professionals (physical, social worker)	over 100 items organized into discipline groups	- measure functional status - set rehabilitation goals - monitor patient progress in rehabilitation	X	
Performance Test of Activities of Daily Living (PADL)	Kurlansky and Gurland	1976	degree of autonomy and dependency, activity of daily living	3 - point scale 0 - performed without help 1 - unable to perform without help 9 - N/A or not requested	psychiatrist, physician, nurse, or nurse's aide	16	assessment of the self-care capacity of geriatric patients for clinical and research purposes	X	X
Person-Environment Fit	Eklund	1974	institutional environment (activities, policies, behaviour, and physical features), morale	3-point scale (high, medium, low); - the "fit" on the variable is the person score - the environment score; - no information on how measurement was made	staff member and individual	90 items for institutional real-ident, 70 items for the environment	measurement of the congruence between environment and person for research purposes	X	X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Person-Environment Incongruence by Elderly with Alzheimer's Disease (Adaptation)	Kiyak, Small, Sumitani	1985	cognitive competence, physical health and self-reported needs and preferences	indices of person and environmental characteristics along each of the 13 dimensions of the 3 domains	trained professional, self-report		determine patterns of person-environment interactions over time		
Philadelphia Geriatric Center Instrumental Activities of Daily Living	Brady and Lawton	1969	autonomy, activities of daily living, social life	- most items on a 3-point scale; - no instructions on summing; - applies a Guttman scale	social worker or nurse	31	assessment of everyday functional life for clinical and research purposes		X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Philadelphia Geriatric Center Instrument Scale Maintenance Scale	Lawton	1972	frequency of meal preparation (except breakfast); frequency of shopping; distance of shopping from residence; manner of doing laundry	Gottman Scale	self-report	4	• placement decisions	X	X
Philadelphia Geriatric Center Mental Status Questionnaire	Flahback	1977	orientation in time and place; memory, intelligence, independence and the ability to locate activities of daily living	• summation of all correct answers • overall results 0 - total loss 1-10 - severe 11-20 - moderate 21-33 - mild 34-35 - not impaired	physician, nurse, nurse's aide	35	• measure of the degree of senile dementia for clinical and research purposes		X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Philadelphia Geriatric Centre Morale Scale	Lawton	1972 1975	morale, psychological well-being	the 1975 version had 3 factors: agitation, attitude toward own aging, and lonely dissatisfaction	self-report	17	the multidimensional morale appropriate for the elderly for clinical and research purposes	X	X
Philadelphia Geriatric Center Multilevel Assessment Instrument	Lawton, Moss, Fulmer and Kleban	1982	behavioural competence (health, activities of daily living, cognition, time use, social interaction), psychological well-being and perceived environmental quality	5-point summary rating scale	health professional	216	measurement of the well-being of the aged for research and clinical applications	X	X
Pulse	Noskowitz and McCann	1957	Independence in life functioning (physical condition, sensory components and intellectual and emotional adaptability)	4-point scale; total scores ranging from 6 to 24	physician	6	functional assessment for clinical and research purposes		

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Rapid Disability Rating Scale II	Linn and Linn	1982	disability, dependency, mental confusion, depression, cooperation	- a 4-point scale; - scores range from 18 to 72	nurse or personnel acquainted with patient	18	a quick clinical measure of the degree of disability in self-care and level of independent functioning	X	X
Rehabilitation Indicators A) status indicators	Diller, Fordyce, Jacobs	1981	vocation, income, education, self-care, family, transportation	consists of six domains	counsellor, data specialist or a team leader		used in both clinical and research settings to provide categorical descriptions of important facets of a client's life		X
B) activity pattern indicators			behavioural outcomes (activities, choices)	- consists of seven groups - approach used can be either the Inventory or the Timeline - both record five dimensions: frequency, duration, location, degree of social interaction and functional	caregiver or self	Inventory 105 activities, 15 case-roles	used with both institutionalized and non-institutionalized clients to measure level and types of activities performed		X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
C) skill indicators			behavioural traits (self-care, mobility, social behaviour, communication, vocational activity, and home making)	- 14 areas of functioning. Each area consists of several groups of skills and within each group there are several particular skills. - several dimensions of one skill are assessed . regularity of occurrence; . speed of performance; . precision; . amount of assistance.	Interviewer	There are 78 skill groups and approximately 700 skills. However, since subsets of skills can be pre-selected, there is no definite number of items on the scale	. assist those directly involved in rehabilitation processes and to planners, evaluators, researchers	X	X

TITLE	AUTHOR(S)	YEAR(S)	DOMAIN	RATING FORMAT	RATER	# OF ITEMS	APPLICATIONS	RELIABILITY	VALIDITY
Self-ratings of health among the old and the old-old	Ferraro	1980	health, financial well-being, education, sex, age, political activity	• ranking of health uses a 4-point scale 1 - excellent 2 - good 3 - fair 4 - poor • checklist of 55 items in which the individual reported the number of illnesses or physiological disorders • disability scale	self-report	55 items for illness or physiological disorders	• assessment of the validity of self-ratings among the elderly		X
Social Network Index	Herkman	1983	intimate contacts (marriage, friends, family), church and group membership	• yes/no format • 3 questions using 0, 1 or 2, 3 to 5, 6, 7, 8, 9, 10 or more	social worker or trained interviewer	11	• research on relationship between social networks and mortality		

SECTION 2: SUMMARY DESCRIPTIONS OF
FUNCTIONAL ABILITY AND HOME
ENVIRONMENT ASSESSMENT PROTOCOLS

BARTHEL INDEX MODIFIED

- DOMAIN:** Activities of daily living, self care, and mobility items (feeding, transfers, grooming, toileting, bathing, walking or propelling a wheelchair, stair climbing, dressing, donning prothesis or brace, bladder control, bowel control).
- PURPOSE:** The purpose of the Modified Barthel Index is to measure the degree to which an individual can function independently in performing activities of daily living. It was designed for rehabilitation settings but has been used with the elderly. The index measures the degree of severity of physical handicap regardless of particular diagnostic designations. It has been used to classify for placement; to determine service needs for long term care in the home setting.
- MEASUREMENT APPROACH:** Assessed by rehabilitation staff.
- RATING SCALE:** The Modified Barthel Index (Fortinsky, Granger and Seltzer, 1981) includes 15 items [The original Barthel Index (Mahoney and Barthel, 1965) had 10]. These include self-care, and mobility items. Total scores can range from 0 to 100. Partial scores are given for performance with help and full scores for independent performance. A full score of 100 signifies the ability to perform all tasks independently. A score of zero signifies total dependence. Items on the scale are weighted. For example, independent performance can be rated to a maximum of 15 depending on the activity (see example below). Two rating schemes have been developed. In the three-level approach, items are rated according to "can do by myself"; "can do with help of someone

else"; and "cannot do at all". (Granger, Albrecht, and Hamilton, 1979). In the four-level approach the "can do it myself" rating is sub-divided to form two rating categories: 1) independent and intact, and 2) independent but limited (Fortinsky, Granger and Seltzer, 1981).

Examples of Item Scoring on the Modified Barthel are shown below:

	<u>"Can do myself"</u>	<u>"Can do with help of someone else"</u>	<u>"Cannot do at all"</u>
a) Self-care Index			
1. Drinking from a cup	4	0	0
3. Dressing upper body	5	3	0
7. Washing or bathing	6	0	0
b) Mobility Index			
10. Getting in and out of chair	15	7	0
14. Walking up/down one flight of stairs	10	5	0

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

Examining a sample of rehabilitation clients, Wylie (1967) found that the Barthel Index correlates well with clinical judgement and predicted mortality. Barthel scores are highly correlated with PULSES scores ($r = .74$ to $.80$, Granger, Albrecht and Hamilton, 1979). It has been used to identify clients who can be discharged to

less restrictive settings (Granger and Greer, 1976). Barthel scores have been found to be correlated ($r = .91$) with number of tasks performed independently by individuals receiving home nursing services (Fortinsky, Granger and Seltzer, 1981).

REFERENCES:

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- Granger, Carl V., Greer, D.S. (1976). Functional Status Measurement And Medical Rehabilitation Outcomes. Archives Of Physical Medicine And Rehabilitation, 57, 103-109.
- Kane, Rosalie A., and Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.
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CARO FUNCTIONING FOR INDEPENDENT LIVING SCALE (FIL)

DOMAIN: Vision, hearing and speech, mobility, bowel and bladder control, confused behaviour, knowledge of identity, ability to make self understood, wandering, extent of non-conventional behaviour.

PURPOSE: The purpose of the Caro Functioning for Independent Living Scale (FIL) is to measure disabilities of the aged. It was first used as a research tool but was also designed to determine eligibility for the Natural Supports Project (a project primarily designed to provide services to families in order to strengthen their capacity to care for their aged member) and to establish service and benefit ranges.

MEASUREMENT APPROACH: Ratings by health professionals based on observation and interview.

RATING SCALE: The scale includes eleven items: vision, hearing and speech, mobility, transfer, hand and arm movement, bowel and bladder control, confused behaviour, identity, speech, wandering, and non-conventional behaviour.

The 11 items, using an ordinal scale, are scored according to weightings assigned to them. For example, vision could be scored 0,2,2,4 or 5, while speech could be scored either 0,1 or 2. Objective descriptions are provided for each. For example, hand movement is assessed in terms of common household tasks, memory in terms of remembering meal preparations or appointments and non-conventional behaviour related to dress and hygiene.

The total possible score on the FIL is 47 which reflects maximum disability.

An example of an item is listed below:

	VISION	SCORE
A.	Speech and hearing with or without mechanical aid adequate to permit essential conversation;	0
B.	Speech is adequate to permit essential conversation but hearing with or without mechanical aid is not;	2
C.	Hearing is adequate with or without mechanical aid to permit essential understanding but speech is not adequate for essential conversation;	2
D.	Neither speech nor hearing with or without mechanical aid is adequate to permit essential conversation.	4

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

While no reliability/validity analyses have been undertaken, the cutting scores established for the FIL appear to have at least face validity in identifying those in need of services (Kane and Kane, 1981).

REFERENCES:

Gross-Andrew, Susannah, Zimmer, Anna H. (1978). Incentives To Families Caring For Disabled Elderly: Research And Demonstration Project To Strengthen The Natural Supports System. Journal Of Gerontological Social Work, 1(2, Winter), 119-133.

Kane, Rosalie A., Kane, Robert L., (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.

CHICAGO ACTIVITY AND ATTITUDE INVENTORY

- DOMAIN:** Personal adjustment, attitudes, satisfaction, health, friendship and family contacts, leisure-time use, economic security and religion.
- PURPOSE:** The purpose of the Chicago Activity and Attitude Inventory was to provide a measurement tool for general research on the problems of older persons in our society. It was essentially action research in relation to policies and programs designed to promote the welfare of old people. It also was to assist in diagnosis in counselling individuals and in classifying for placement. Moreover, the Inventory was to be utilized in the revision and the perfection of instruments for measuring personal adjustment.
- MEASUREMENT APPROACH:** Self-administered.
- RATING SCALE:** Three types of scales are used for the Chicago Activity and Attitude Inventory. For one type a check mark is placed next to an appropriate response. For another, respondents are asked whether they agree or disagree with a statement. Finally they are also asked to write prose answers to questions.
- The Inventory consists of 110 items. There is an attitudes sub-scale consisting of 8 items, an activities sub-scale, and a general information section.

Examples of the Inventory are listed below:

B. Your health

3. What are your serious physical problems?

poor sight	_____
blind or nearly so	_____
hard of hearing	_____
deaf or nearly so	_____
crippled arms, hands or legs	_____
general rheumatic stiffness	_____
heart trouble	_____
stomach trouble	_____
high blood pressure	_____
no physical problems	_____
other (what is it?)	_____

C. Your family

13. If you have a family or close relative,
do they neglect you?

Yes, completely	_____
A little	_____
Not at all	_____

D. Clubs and organizations

5. How many club meetings do you usually
attend each month?

None	_____
Less than one a month	_____
One or two a month	_____
One a week	_____
Two or more a week	_____

Your Attitudes

	<u>Agree</u>	<u>Disagree</u>	<u>?</u>
A. 1. I feel just miserable most of the time	—	—	—
2. I am perfectly satisfied with my health	—	—	—
3. I never felt better in my life	—	—	—
4. If I can't feel better soon, I would just as soon die	—	—	—
5. When I was younger, I felt a little better than I do now	—	—	—
6. My health is just beginning to be a burden to me	—	—	—
7. I still feel young and full of spirit	—	—	—

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

The Attitude Inventory and the Activity Inventory show satisfactory reliability for use by groups, when measured by the Spearman-Brown Formula, odd-even test.

In a validity study of the Chicago Attitude Inventory, very high correlations of .74 and .64 were reported between judges' ratings and scores on the Inventory. Moderate correlations were found between the Activity Inventory and the Attitude Inventory.

REFERENCES:

Cavan, R.S., Burgess, E.W., Havighurst, R.J., Goldhamer, H. (1949).
Personal Adjustment in Old Age. Chicago: Science Research Associates.

Havighurst

Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide to Measurement. Lexington, Mass.: Lexington Books

Lawton, M.P. (1972). Assessing The Competence Of Older People. in: Kent, D.P., Kastenbaum, R., Sherwood, S. (eds.). Research Planning and Action For The Elderly: The Power And Potentail Of Social Science. New York: Behavioural Publications.

Lawton, M.P. (1971). The Functional Assessment Of Elderly People. American Journal Of The American Geriatrics Society. 19(6, June), 465-481.

Palmore, Erdman B. (1973). The Effects Of Aging On Activities And Attitudes. in: Brant, V.M., Brown, Sister M.R. (eds.). Reading In Gerontology. Saint Louis: C.V. Mosby.

COMPREHENSIVE ASSESSMENT AND REFERRAL EVALUATION (CARE)

DOMAIN: Psychiatric, medical, nutritional, economic and social functioning.

PURPOSE: The purpose of the Comprehensive Assessment and Referral Evaluation (CARE) is to reliably obtain, record and scale information on the health and social problems of the elderly. It was initially designed to collect longitudinal data on elderly residents in New York, USA and London, UK. It was intended to assist in determining whether an elderly person should be referred for services and to assess the effectiveness of therapy.

MEASUREMENT APPROACH: Assessment by well trained interviewers (psychiatrists).
General measurement approach - interview and observation.

RATING SCALE: The Comprehensive Assessment and Referral Evaluation is a semi-structured interview guide and an inventory of defined ratings, consisting of a series of printed questions or script which the interviewer reads to the interviewee. Within CARE, there are questions mandatory in all cases and contingent questions, which are only asked when the responses of the interviewee indicate that a particular problem area requires further probing.

The duration of a CARE inventory is on the average 1½ hours. It can be completed in as little as 45 minutes or as much as 2½ hours. The information is recorded by the interviewer by circling a rating.

The CARE ratings record whether a device is used by the respondent. The evaluation consists of "self-report" items (which are primarily descriptive in nature); "test" items (which test the interviewees capacity to correctly remember facts, carry out simple calculations or perform simple actions); "observation" items (based on the interviewee's spontaneous expression of emotion, speech or other behaviour) and "global" items (which are based on a review of information gathered during the course of the interview).

For self-report or test items, there are 285 mandatory and 280 contingent questions. There are 363 defined ratings for the mandatory questions and 368 for the contingent questions among the self-report or test items. There are 81 defined ratings in observation items and 30 defined ratings in global items. About equal thirds of the defined ratings are assigned to psychiatric, medical and social problems.

The following are examples of CARE:

- a) Have you been sad (depressed, miserable, in low spirits during the past month)?
If yes: What caused that depression? (Is it about anything in particular?)
- b) Do you have difficulty walking? (Getting around?)
(Do you ever need help in walking?)
- c) Have you ever felt that you'd rather be dead? (Have you ever thought of doing anything about it?)
If yes: Have you felt like that recently?
In the last month? Did you actually try anything?

When was that? What did you do? What did you plan to do?

INFORMATION ON
RELIABILITY/VALIDITY
STANDARDIZATION:

The initial reliability study on the CARE was carried out in New York (Gurland et al, 1977). There was very good reliability between all pairs of raters on the psychiatric dimensions of memory-disorientation (.88 inter-rater reliability) and depression-anxiety (.92).

On the medical-physical dimensions, there was poor reliability (for mobility-incapacity an inter-rater reliability of .48 and for physical-perceptual difficulty .61). The results from the social dimensions were acceptable (.72 for isolation and .79 for poor housing-income).

The reliability study showed the importance of training in the procedural rules for assessment.

The validity of the CARE can be inferred from its parent instruments. Its psychiatric items are mostly derived from the Geriatric Mental Status (GMS) which has been cross-validated against diagnoses by expert clinicians. Many of the medical items have been similarly validated. The social isolation items have been validated by Bennett (1973) and the items on the Activities of Daily Living by Kuriansky et al (1976).

REFERENCES:

Bennett, R. (1973). Living Conditions And Everyday Needs Of The Elderly With Particular Reference To Social Isolation. International Journal Of Aging And Human Development, 4, 179-198.

Bennett, R. Nahemow, L. (1973). Institutional Totality And Criteria Of Social Adjustment In Residences For The Aged. Journal Of Social Issues, 21, 1143-1163.

Gurland, B., Kuriansky, J., Sharpe, L., Simon, R., Stiller, P., Birkett, P. (1977). The Comprehensive Assessment And Referral Evaluation (CARE) - Rationale, Development And Reliability. International Journal Of Aging And Human Development. 8(1), 9-42.

Israel, Liliane et al. (1984). Source Book of Geriatric Assessment. Volume 1 - Evaluations In Gerontology; Volume 2 - Review of Analyzed Instruments. New York: Karger, 1984 in collaboration with World Health Organization.

Kane, Rosalie A., Kane, R.L. (1981). Assessing The Elderly: A Practical Guide to Measurement. Lexington, Mass.: Lexington Books.

Kuriansky, J.B., Gurland, B.J. (1976). The Performance Test Of Activities Of Daily Living. International Journal Of Aging And Human Development, 7, 343-352.

CUMULATIVE ILLNESS RATING SCALE

DOMAIN: Physical impairment.

PURPOSE: The purpose of the Cumulative Illness Rating Scale is to measure overall health of the elderly, either to produce a measure of the amount of lifetime bodily impairment or as a measure of current severity of impairment. The scale can summarize the physician's diagnostic and prognostic illnesses. The Cumulative Illness Rating Scale has also been used to predict mortality.

MEASUREMENT APPROACH: Administered by health professionals.
General measurement approach - assessment.

RATING SCALE: The scale provides for the rating of 13 independent organ areas. The items are grouped under body systems in an effort to increase the degree of communality in item interpretation.

A five-point scale is used for determining level of impairment. It extends from (0) "none" to (4) "extremely severe".

A separate score is derived for each of the thirteen organ systems and for overall pathology (by adding the 13 items together). An attempt was made to keep vital organs as separate items in order to give a more descriptive picture of impairment, and to obtain validating information. Judgments on degree of impairment are based on an adequate and complete medical examination and health history.

Examples of the scale are presented below:

<u>SCORE (0-4)</u>	<u>A) CARDIOVASCULAR-RESPIRATORY SYSTEM</u>
1. ___	cardiac (heart only)
2. ___	vascular (blood, blood vessels and cells, marrow, spleen, lymphatics)
3. ___	respiratory (lungs, bronchi, trachea below the larynx)
4. ___	throat (eye, ear, nose, throat, larynx)
	<u>B. NEUROPSYCHIATRIC SYSTEM</u>
11. ___	neurologic (brain, spinal cord, nerves)
12. ___	psychiatric (mental)
	<u>GENERAL SYSTEM</u>
13. ___	endocrine metabolic (includes diffuse infections, poisonings)

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

In a 1968 study (Linn, Linee and Gure), three staff physicians and three resident physicians made independent ratings on the same 20 patients. The findings indicated a high degree of consistency between raters (Kendall's W = .83 to .91).

Kane and Kane (1981) question its reliability when applied away from its initial Veterans Administration setting. It can only be used when very detailed information is available on each patient and this limits its adaptability to hospital and community settings.

The validity of the CIRS was assessed in research on physical resistance of the aged. Essentially, the hypothesis that longevity is related to physical resistance was tested. Health histories of 472 persons were examined. Scale scores showed statistically significant correlations with deaths and vital organ involvement.

Linn, Linn and Gurels' (1968) findings suggested that the scale was as potentially useful as a clinical tool for medical prognosis, as well as a research tool for physical evaluation.

REFERENCES:

Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide to Measurement. Lexington, Mass.: Lexington Books.

*Linn, B.S., Linn, M.W., Gurel, L. (1968). Cumulative Illness Rating Scale. Journal Of the American Geriatrics Society, 16(5, May), 622-626.

FUNCTIONAL ASSESSMENT INVENTORY

- DOMAIN:** Physical condition, motor functioning, cognition, communication, vocational qualifications, vision and adaptive behaviour.
- PURPOSE:** The purpose of the Functional Assessment Inventory is to provide a comprehensive assessment of functional limitations in relation to vocational prospects. It is a vocationally-oriented system of functional assessment designed for use with vocational rehabilitation clients to assist in the areas of client service, counsellor training, and research. It is also intended to be used to classify disabilities according to degrees of severity.
- MEASUREMENT APPROACH:** Completed by a rehabilitation counsellor.
General measurement report - assessment.
- RATING SCALE:** The Functional Assessment Inventory uses 4-point rating scales. For each item the scores can range from "0" - no significant impairment to "3" - severe levels of difficulty.
- The scale deals with observable behaviours - self reported problems (for example, pain or low self-esteem) were eliminated. The Inventory, which consists of 30 items, includes measures of endurance. The 30 items are grouped into 7 areas: adaptive behaviour, motor functioning, cognition, physical condition, communication, vocational qualifications, and vision.

Some examples of the Function Assessment Inventory are listed below.

1) Vision

- 0 - No significant impairment.
- 1 - Has difficulty handling work involving fine visual detail.
- 2 - Impairment is sufficient to interfere with major activities such as driving or reading.
- 3 - Total or nearly total loss of vision (uses cane for mobility outdoors).

2) Skills

- 0 - No significant impairment.
- 1 - No available skills that are job-specific. However, possesses general skills (i.e. educational or interpersonal) that could be used in a number of jobs.
- 2 - Has few general skills, job-specific skills are largely unusable due to disability to other factors.
- 3 - Has no job-specific skills and has very few general or personal skills transferable to a job situation.

INFORMATION ON
RELIABILITY/VALIDITY/
STANDARDIZATION:

The Functional Assessment Inventory (FAI) has undergone two tests of reliability. These were conducted with different samples and under quite different conditions, however, in both cases, the reliability coefficients indicated adequate inter-rater reliability.

The FAI shows high internal consistency indicating reliability and construct validity. Also, when factor analyzed, the item loadings across the instrument are

generally high. The concurrent validity of the FAI, using counsellor ratings of severity of disability and employability, is supported by appropriate correlations with FAI scores in three samples.

REFERENCES:

Crewe, Nancy M., Athelstan, Gary T. (1979). Functional Assessment in Vocational Rehabilitation. International Journal of Rehabilitation Research, 2(4), 535-536.

*Crewe, Nancy M., Athelstan, Gary T., Meadows, Garland K. (1975). Vocational Diagnosis Through Assessment of Functional Limitations. Archives of Physical Medicine and Rehabilitation. 56(December), 513-516.

Crewe, Nancy M., Turner, Ralph R. (1984). A Functional Assessment System For Vocational Rehabilitation. in: Halpern, A.S., Fuhrer, M.J. Functional Assessment in Rehabilitation. Baltimore: Paul B. Brookes.

FUNCTIONAL CAPACITY EVALUATION

DOMAIN: Dependence, pain and difficulty in performing activities of daily living.

PURPOSE: The Functional Capacity Evaluation is designed to use activities of daily living (ADL) to assess the functional capacity of non institutionalized individuals with arthritis. It is also intended to measure the degree of functional dependence. Furthermore, the scale was to be used as a clinical and evaluational tool.

MEASUREMENT APPROACH: Data collected by the physical therapist.
General measurement approach - assessment, observation.

RATING SCALE: The Functional Capacity Evaluation measures three dimensions of functional capacity: dependence, pain and difficulty for 45 different items of ADL. The degree of functional dependence of clients is ranked by the degree of assistance they require by the following 5-point scale:

- 0 - independent, uses no assistance;
- 1 - uses mechanical assistance;
- 2 - uses human assistance;
- 3 - uses mechanical and human assistance; and
- 4 - cannot perform the activity.

The individual's degree of pain and difficulty are ranked on the following 4-point scale:

- 1 - no pain/difficulty;
- 2 - mild pain/difficulty;

3 - moderate pain/difficulty; and

4 - severe pain/difficulty.

A sub-scale score for an individual for each of the three dimensions of functional capacity can be calculated.

The 45 items compose five common functional categories: physical mobility, transfers, home chores, kitchen chores, and personal care.

A few examples of the items in the scale are:

- . driving, other transportation;
- . doing laundry;
- . transferring to/from bed;
- . buttoning/zippering; and
- . doing dishes.

INFORMATION OF

RELIABILITY/VALIDITY/

STANDARDIZATION:

A study done by Jette and Deniston in 1978 indicated that the scale has moderate reliability as a comprehensive assessment of functional capacity.

REFERENCES:

*Jette, Alan M. (1980). Functional Capacity Evaluation: An Empirical Approach. Archives of Physical Medicine and Rehabilitation, 61(February), 85-89.

Jette, Alan M., Deniston, O.L. (1978). Inter-observer Reliability Of Functional Status Assessment Instrument. Journal Of Chronic Disability, 31, 573-580.

THE FUNCTIONAL LIFE SCALE (FLS)

- DOMAIN:** Mental status, activities of daily living, social interaction.
- PURPOSE:** The purpose of this scale is to provide a quantitative measure of an individual's ability to participate in all of the basic daily activities. It has been used to measure degrees of disability and the success of a rehabilitation program. The FLS is also used to estimate the influence of certain physical, psychological or social factors in the rehabilitation process and was developed for a rehabilitation (not necessarily elderly) population.
- MEASUREMENT APPROACH:** Administered by a physician, psychologist, or other health professional.
- RATING SCALE:** The Functional Life Scale consists of 44 items and ranks the patient on actual performance, not on what the patient is capable of doing. For each of the 44 items, the raters are asked to rate the individual in the following, if applicable:
- 1) speed;
 - 2) frequency;
 - 3) self-initiation; and
 - 4) overall efficiency.
- The raters use a 5-point scale, consisting of:
- 0 - does not perform the activity at all;
 - 1 - very poor;

- 2 - deficient;
- 3 - approaches normal;
- 4 - normal.

It is the total for each item that is important because this defines what the patient actually does. However, the individual scores for each quality can determine the contribution of such factors as motivation and speed.

The 44 items in the Functional Life Scale can be grouped into 5 categories: 14 on cognition; 7 on activities of daily living; 8 on activities in the home; 9 to outside activities; and 6 in a category called social interaction which includes vocational status.

A few examples of FLS are listed below:

	Not Applicable	Self Initiation	Frequency	Speed	Overall Efficiency	Total
11. Social behaviour is appropriate.						
17. Feeds self.						
28. Uses telephone set (eg. changing channel).						
31. Goes shopping for food.						
39. Participates in games with other people (eg. cards, chess, checkers).						

INFORMATION ON

RELIABILITY, VALIDITY,

STANDARDIZATION:

Sarno, Sarno and Levita tested the FLS in 1973. Test - retest reliability (consistency over time, intra-rater reliability) was found to be good. In addition, they tested inter-rater reliability and also rated this as good. They concurred that raters from a variety of disciplines could be used for the testing with minimal training.

In order to assess the validity of the FLS, Sarno, Sarno and Levita (1973) compared clinical evaluations and the FLS ratings. The use of a Spearman rank order correlation yielded a value of 0.69, (p .001).

REFERENCES:

Israël, Lilliane et al. (1984) Source Book of Geriatric Assessment. Volume 1 - Evaluations in Gerontology, Volume 2 - Review Of Analysed Instruments. New York: Karger, in collaboration with World Health Organization.

*Sarno, John E., Sarno, Martha T., Levita, E. (1973). The Functional Life Scale. Archives Of Physical Medicine and Rehabilitation, 54(May), 214-220.

FUNCTION STATUS INDEX

DOMAIN: Activity, mobility, and movement.

PURPOSE: The Function Status Index is used to test hypotheses about social functioning and to evaluate the effectiveness of different health-care delivery systems. Function status is viewed in terms of the degree to which an individual is able to perform socially allocated roles and specified in terms of behavioural functioning, not in a physical or medical sense. It was designed for use with the general adult population, not specifically for the elderly.

MEASUREMENT APPROACH: Administered by trained interviewer.
General measurement approach - self-report.

RATING SCALE: The interview scale developed elicits information on three dimensions of functional status (movement, mobility and activity). The activity dimension is broken up further between role activity and self-care activity. Questions were stated in behavioural terms and deal with the respondent's performance on the preceding day.

The scale for the movement dimension is a 4-point scale.
For example:

- 1 - in bed or chair;
- 2 - moved independently in wheelchair;
- 3 - walked with limitations; and
- 4 - walked freely.

A 5-point scale was used for mobility scores, a 4-point scale on the Role Activity dimension and a 5-point scale

on the Self-Care Activity, depending on the number of self-care activities that can be performed.

The questions in each area can be answered by a "yes" or a "no". Also, the questions are the same for all respondents in all dimensions, except for the role activity items which are unique for age, sex, and employment status.

For each of the four dimensions, one rating indicates complete freedom from health-related behavioural limitations. If an individual indicated an inability to perform at the normal level, he/she was asked for an explanation. Responses were coded "health related" and "not health related".

INFORMATION ON
RELIABILITY, VALIDITY
STANDARDIZATION:

The authors (Reynolds, Miles, Rushing) argue that since the design of the instrument is based on a survey of established data collection tools, then the index has content validity. With respect to criterion validity, the function status index of an individual is inversely related to the number of chronic conditions reported by a National Health Survey. In addition, the relationship between the two variables was found to be basically linear. However, the authors point out that they are really measuring a combination of function and health status. While the number of reported chronic conditions is a good index for measuring health status it is not adequate to assess the impact of health care delivery programs. Reynolds, Miles, and Rushing also examined construct validity. They found that these results were consistent with

theoretical expectations (i.e. that the most frequently occurring state was the normal or dysfunction-free state).

REFERENCES:

- *Reynolds, W.J., Rushing, William A., Miles, David L. The Validation Of A Function Status Index. Journal of Health and Social Behavior, 271-288.

GERIATRIC FUNCTIONAL RATING SCALE (GRAUER AND BIRNBON)

- DOMAIN:** Functional, physical, mental, financial and social support status.
- PURPOSE:** The purpose of the Geriatric Functional Rating Scale by Grauer and Birnbon is to determine the need for institutional care by assessing the elderly person's physical and mental disability, balanced against his/her ability to function and the support available from relatives and community resources. Moreover, it can aid in the choice of the appropriate institutional setting.
- MEASUREMENT APPROACH:** Assessment by social worker, nurse.
General assessment report - observation.
- RATING SCALE:** The Geriatric Functional Rating Scale consists of 30 items, under 7 headings: physical condition, mental condition, functional abilities, support from the community, living quarters, relatives and friends, and financial situation.
- Physical and mental conditions are rated by the tester, and any impairments on these items are given negative scores. Items are weighted with individuals requiring a wheelchair for mobility, and individuals with "malignant" memory loss receiving high negative scores.
- Functional abilities, support from the community, living quarters, relatives and friends, and finances are all rated and given positive scores. In considering community support, it includes items rarely seen in other tools, the availability of services such as meals on wheels and friendly visitors and the ethnic compatibility of the individual and the neighbourhood.

The final score consists of the sum of the minus and plus scores. It has been criticized for having a fairly arbitrary scoring system (Kane and Kane, 1981). This scale was developed and has been used in Canada.

An example of the Geriatric Functional Rating Scale is listed below:

1. Physical Condition

	Observation	Score	Observation	Score	Observation	Score
A. Eyesight	Good	0	Distinguishes faces	- 3	Sees light only	-10
	Watches T.V.					
	Reads					
	Needlework					
B. Hearing	Good	0	Loud voices	- 3	Deaf	- 5

2. Mental Condition

A. Disorientation	None	0	Time	- 3	Person and/or Place	-15
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3. Functional Abilities

A. Reads and writes letters	+2
B. Uses public transportation	+7

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

In a follow-up study of 130 individuals 18 months after the initial study, of those who were originally assessed with this method and had a score of under 20, 83 percent were institutionalized or no longer living (Graver and Birnbaum, 1975). Moreover, 90 percent of those who achieved a score of 40 or more were residents in the community. Although reliability has not been assessed, expertise and training would be required to administer the scale.

REFERENCES:

*Grauer, H. Birnbom, F. (1975). A Geriatric Functional Rating Scale To Determine The Need For Institutional Care. Journal Of The American Geriatrics Society, 23(10, October) 472-476.

Kane, Rosalie A., Robert L., (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.

GRANGER RANGE OF MOTION

DOMAIN: Range of movement - shoulders, elbows, wrists, fingers, thumbs, hips, knees and ankles.

PURPOSE: This test is designed to provide a standard measurement tool for range of motion, and is designed for use with any age group.

MEASUREMENT APPROACH: The individual performs the movements which a health professional rates.

RATING SCALE: The scale focusses on 32 items dealing with specific motions of the shoulders, elbows, wrists, fingers, thumbs, hips, knees, and ankles. The patient demonstrates whether he/she can perform a specific movement of a body part and each item is classified by whether movement is performed: "against resistance"; "without resistance"; "in passive motion only"; or "in combination of active and passive motion". In this sense, the scale also examines strength. A total score is not calculated.

REFERENCES:

Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.

KATZ INDEX OF ADL

DOMAIN:

Activities of daily living.

PURPOSE:

The purpose of the Katz Index of ADL is to study the results of treatment and prognosis in the elderly and chronically ill. It is to serve as an objective guide to the course of chronic illness and to be used as a tool for studying the aging process. Moreover, it is to aid in rehabilitation teaching. Although widely used with elderly populations, it was originally designed for use on rehabilitation populations.

MEASUREMENT APPROACH:

Administered by a health professional.

General measurement approach - assessment, observation.

RATING SCALE:

The Katz Index of ADL is an ordinal rating scale that consists of 6 ADL functions (in order of decreasing dependency): bathing, dressing, going to the toilet, transfer, continence, and feeding.

Each ADL item of dependency is given one point for dependency. The eventual results indicate only independence and dependence. The form differentiates between those who can perform the activity without any help.

In the order given, the six ADL items can form a Guttman scale. The individual's score is indicated by a letter between A and G according to the following criteria.

- A. Independent in feeding, continence, transferring, going to toilet, dressing and bathing.
- B. Independent in all but one of these functions.

- C. Independent in all but bathing and one additional function.
- D. Independent in all but bathing, dressing, and one additional function.
- E. Independent in all but bathing, dressing, going to toilet, and one additional function.
- F. Independent in all but bathing, dressing, going to toilet, transferring, and one additional function.
- G. Dependent in all six functions.
- Other Dependent in at least two functions, but not classifiable as C, D, E, or F.

An example of the Katz Index of ADL is the following:

1. Bathing - either sponge bath, tub bath, or shower

0
receives no assistance
(gets in and out of
tub by self if tub is
usual means of
bathing).

0
receives assistance in
bathing only one part
of body (such as back
of leg).

1
receives assistance in
bathing more than one
of body (or not
bathed).

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

The Katz Index of ADL has proved to be very reliable. It has reported inter-rater differences of less than 1 in every 20 evaluations. With respect to validity, the index correlates with mobility and confinement to home after discharge.

REFERENCES:

Israel, Liliane et al. (1984) Source Book Of Geriatric Assessment, New York: Karger.

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Katz, S., Downs, T.D., Cash, H.R., Grotz, R.C. (1970). Progress In Development Of The Index Of ADL. The Gerontologist, 1970 (Part I, Spring), 20-30.

Katz, S., Ford, A.B., Moskowitz, R.W., Jackson, B.A., Jaffe, M.W. (1963). Studies Of Illness In The Aged. Journal Of The American Medical Association, 185(12), 914-919.

Katz, S., Dube, David H., Calkins, E. (1985). Use Of A Structured Functional Assessment Format In A Geriatric Consultative Service. Journal Of The American Geriatrics Society, 33(10, October), 681-686.

KENNY SELF-CARE EVALUATION (REVISED)

- DOMAIN:** Bed activities, transfers, locomotion, personal hygiene, dressing and feeding.
- PURPOSE:** The purpose of the Kenny Self-Care Evaluation is to assess the patient's physical capacity to function within his/her home or within institutional environments. It is also intended to measure patterns of improvement in self-care activities and to measure progress in function of a patient and an entire disability group. The evaluation can be used to compare treatment results of different programs. It was originally designed for use with rehabilitation populations, though it has been widely used with elderly.
- MEASUREMENT APPROACH:** Administered by health professionals.
General measurement approach - observation/assessment.
- RATING SCALE:** The Kenny Self-Care Revised includes seventeen activities, each of which is allocated to one of six categories: bed activities, transfers, locomotion, personal hygiene, dressing or feeding. Each category is rated on a five - point Likert Scale, ranging from zero, for complete dependence, to 4 for independence according to the number of activities in the category which can be performed. The criteria for the evaluation is as follows:
- zero all -'s (i.e. each activity rated as "-" indicating dependence);
 - one one or two activities where assistance and/or supervision is required (or one +, all other -'s);
 - two all other combinations;
 - three one or two activities which require assistance and/or supervision; all other independent;

four all +'s (i.e. each activity rated as "+" indicating independence).

The number of sub-items within each of the 6 categories varies. For example, personal hygiene have five subitems, while bed activiteis has two. Together the sub-items represent the countless individual tasks performed during a 24-hour period.

There is a score for each of the six categories. It is obtained by summing the subscores and dividing by the number of items. In this way the five-item category on personal hygiene is weighed equally with the single-item category on feeding. A total self-score is calculated as the sum of the average scores in each of the 6 categories. The independent patient would thus achieve a maximum score of 24, the totally dependent patient a score of zero.

Examples of the evaluation are listed below.

a. Personal hygiene

1. washing face and arms;
2. washing trunk and perineum;
3. washing lower extremities;
4. bowel program; and
5. bladder program.

b. Bed activities

1. moving in bed; and
2. rising and sitting in bed.

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

While reliability figures are not available for the Kenny Self-Care Evaluation (Revised), the subtasks and decision rules are very precise. This would enhance reliability.

The evaluation does have face and content validity. Using the scale, one can plot learning curves that predict total rehabilitation time and indicate when to discharge (Schoening and Iversen, 1968).

REFERENCES:

Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.

*Schoening, Herbert A., Iversen, I.A. (1968). Numerical Scoring Of Self-Care Status: A Study Of The Kenny Self-Care Evaluation. Archives Of Physical Medicine And Rehabilitation, 46(October), 689-697.

*Schoening, Herbert A., Iversen, Iver A. (1965). Numerical Scoring Of Self-Care Status: A Study Of The Kenny Self-Care Evaluation. Archives Of Physical Medicine And Rehabilitation, 49(April), 221-229.

KLEIN-BELL ADL SCALE

- DOMAIN:** Activities of daily living (dressing, mobility, elimination, bathing/hygiene, eating, and emergency telephone use).
- PURPOSE:** The purpose of the Klein-Bell ADL scale is to measure activities of daily living functioning for clinical and research purposes. The scale was designed for use with an inpatient rehabilitation population.
- MEASUREMENT APPROACH:** Assessment by occupational-therapists, registered nurses and physiotherapists.
General measurement approach - assessment.
- RATING SCALE:** The Klein-Bell ADL Scale consists of 170 behavioural items. The items include only the basic or simple activities, such as dressing, mobility, elimination, bathing/hygiene, eating and emergency telephone use. Higher level skills such as cooking and house cleaning are not included since the degree of skill required and the frequency of performance varies widely.
- The behavioural items are scored as either "achieved" or "failed". Achieved means that behaviour is performed without verbal or physical assistance from another person and failed means that assistance is needed. Each of the 170 items are weighted by a factor which was determined by ten experienced rehabilitation professions according to four criteria:
- 1) How difficult is performance of this activity for the average able-bodied person?
 - 2) How difficult is it for the average able-bodied person to perform this activity for someone else (provide maximum assistance)?

- 3) How much time does it take to perform this activity?
- 4) How injurious to one's health would it be if the activity could not be performed?

Patients "achieving" an item receive all points assigned to that item. There is no grading of the degree of "achieving" the item. Failure of an item receives zero points. Total points achieved within each of the ADL areas are simply added together for the overall ADL independence score.

An example of the Klein-Bell ADL Score is listed below:

E. Shorts/Pants

23. Reach shorts to foot
24. Get right leg into right leghole
25. Get left leg into left leghole
26. Pull pants up to waist
27. Zip zipper
28. Fix fastener

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

Interrater reliability was initially obtained by having 20 patients rated by 2 occupational therapists or by 2 rehabilitation nurses. For all items, there was 93 percent agreement between raters.

For validity, contact was made with patients 5 to 10 months after their discharge. The Pearson product moment correlation coefficient between ADL Scale Scores

at discharge and number of hours per week of assistance received was - 0.86. Hence, the lower the score on the Klein-Bell Scale, the greater the amount of assistance required.

REFERENCES:

- *Klein, Ronald M., Bell, B. (1982). Self-Care Skills: Behavioral Measurement With Klein-Bell ADL Scale. Archives Of Physical Medicine And Rehabilitation, 63(July), 335-338.

LONGITUDINAL FUNCTIONAL ASSESSMENT INVENTORY (RINTALA)

- DOMAIN:** Independence, mobility, hours out of bed, overall activity level, family involvement, and ward activity level.
- PURPOSE:** The Longitudinal Functional Assessment Inventory (LFA) is based on the continuous and direct measure of client performance in various settings from admission to discharge in a rehabilitation center and then after discharge. It is designed for use with a general adult rehabilitation population. It provides a detailed and objective basis for assessing the status of clients and their progress over time and in different settings. It was developed to provide information on outcomes which could be used in rehabilitation to develop a more scientific foundation and become more cost-effective.
- MEASUREMENT APPROACH:** Administered by health professional or trained observer/interviewer and self-report.
General measurement approach -
observation/assessment/interview/unobtrusive measures.
- RATING SCALE:** The Longitudinal Functional Assessment Inventory consists of several measures including:
- . direct observation;
 - . interview;
 - . instrumental measures; and
 - . environmental negotiability survey.

Direct observations are conducted for ninety minutes each week until a 15 hour period has been observed. Observers monitor patient behaviour by recording the

molar activities (eg. brushing teeth), the beginning and ending time of each activity, whether assistance was given, whether conversations occurred and the location of the activity.

The second measure consists of interviews, often referred to as the self-observation and report technique (SORT). It is a method of gathering information about the daily activities of selected individuals. It produces a quantitative record of what the person did, when, with whom, where and how the activities were carried out. Essentially, patients monitor and report their own behaviour.

The third measure, instrumented measures, is composed of two instruments; the wheelchair odometer and rest time/site time monitors (RTM/STM). The wheelchair odometer is a small, mechanical counter that, when attached to a wheelchair, provides a measure of the distance travelled during a given period. The RTM/STM is a series of pressure-sensitive switches beneath an individual's mattress or under a wheelchair cushion that records elapsed time spent in bed.

The fourth measure of the LFAS is the Environmental Negotiating Survey (ENS). It is a method to determine the accessibility of environments that are used by persons with physical disabilities. Soon after discharge, an inventory is made of all the objects which elicit, require or impinge on behaviour in and around a person's home. Data from the survey can be used to pinpoint and resolve problem areas by location, type of object, and/or type of behaviour. Repeated use of the

survey can document the effects of any changes that are made in the environment.

A factor - cluster analysis of 215 variables derived from the combined data collection methods yielded a set of six behavioural vital signs. These are: independence, mobility, hours out of bed, overall activity level, family involvement, and ward activity level.

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

With respect to direct observation, a study done by Rintala, Alexander, Willems and Halstead in 1980 reported that for data obtained by the narrative and note-form methods, the average interobserver-intercoder agreement (reliability) was 0.92. Two studies have provided the most closely controlled test of the reliability of SORT. The first study, reported by Norris-Baker (1980) and Stephens (1980) had clients report their activities which were verified by independent, direct observations. On average, the clients reported 86 percent of their activities correctly. In 1982, Rintala found that clients' reports of activities agreed with independent observations 77 percent of the time. Rintala, Alexander, Willems and Halstead (1980) also reported high interrater reliability (.97) for the environmental negotiability survey.

REFERENCES:

Norris-Baker, C. (1980). Self-observation And Report Of Behavior: Process And Utilization. Unpublished Doctoral Dissertation, University of Houston.

Norris-Baker, C., Stephens, Mary Ann P., Rintala, D.H. (1981). Patient Behavior As A Predictor Of Outcomes In Spinal Cord Injury. Archives Of Physical Medicine And Rehabilitation, 62(December), 602-608.

Rintala, D.H., Alexander, J.L., Willems, E.P., Halstead, L.S. (1980). Clinical Applications Of Longitudinal Functional Assessment. International Journal Of Rehabilitation Research, 3(3), 371-374.

*Rintala, D.H., Uttermohlen, D.M., Buck, E., Hanover, D., Alexander, J.L., at al. (1984). Self-Observation And Report Technique (SORT): Description And Clinical Applications. in: Halpern, A.S., Fuhrer, M.J., Functional Assessment In Rehabilitation, Baltimore: Paul B. Brookes.

Stephens, M.A.P. (1980). Self-observation And Report Of Behavior: Accuracy, Validity, And Reactivity. Unpublished Doctoral Dissertation, University of Houston.

MENTAL STATUS QUESTIONNAIRE

- DOMAIN: Orientation, memory, calculation, and general and personal information.
- PURPOSE: The purpose of the Mental Status Questionnaire was to develop brief, objective, and quantitative measures of mental functioning related to cerebral impairment. The questionnaire was designed and tested on an elderly population.
- MEASUREMENT APPROACH: Administered by a psychologist.
General measurement approach - assessment.
- RATING SCALE: The Mental Status Questionnaire consists of 10 questions that were selected from a longer list of 31 questions. The 10 questions were drawn partly from standard mental status examination procedures and partly from special investigations of patterns of altered behaviour with cerebral dysfunction. The questions selected were believed to be the most discriminating and were used for the qualitative determination of mental status.
- The response to each of the questions was scored as right or wrong. In the analysis of data each subject was placed in one of 3 groups according to the number of errors made in response to the questionnaire:
- group 1 - persons making 0-2 errors;
 - group 2 - persons making 3-8 errors;
 - group 3 - persons making 9 or 10 errors.
- The 10 questions of the MSQ are:
1. What is the name of this place?
 2. Where is it located (address)?

3. What is today's date?
4. What is the month now?
5. What is the year?
6. How old are you?
7. When were you born (month)?
8. When were you born (year)?
9. Who is the president of the United States?
10. Who was president before him?

INFORMATION ON
RELIABILITY/VALIDITY
STANDARDIZATION:

Kahn et al (1960) report that test-retest reliability is better than 0.80 for the Mental Status Questionnaire. Wison, Roy and Bunsil (1973) also indicated good reliability, for a sample of 55 cases, the MSQ was given four times at three week intervals. Three-quarters of the scores changed by one or less. A study by Kahn, Goldfarb, Pollack and Peck (1960), reported a marked relationship between a psychiatrists' evaluations of the presence and degree of chronic brain syndrome and the results of the Mental Status Questionnaire. Ninety-four percent of those making no MSQ errors were rated as having no or mild chronic brain syndrome (CBS). Also, of those with 10 MSQ errors, 95 percent were considered to have moderate or severe CBS.

Wilson, Grant, Witney and Kerridge (1973) found a close relation between MSQ scores and an occupational therapist's independent rating of status based on activities of daily living.

REFERENCES:

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OARS QUESTIONNAIRE

- DOMAIN:** Physical and mental health, activities of daily living, instrumental activities of daily living, socio-economic resources.
- PURPOSES:** The OARS Multidimensional Functional Assessment Questionnaire was developed to provide a comprehensive multidimensional assessment tool for use with the community living elderly. It was designed to assess functional capacity in five dimensions (social resources, economic resources, mental health, physical health, and activities of daily living) and to measure use of and need for 24 types of generic services.
- MEASUREMENT APPROACH:** Application by physician, psychiatrist, social worker, investigator
General measurement report - assessment
- RATING SCALE:** The OARS Questionnaire consists of two sections: the Multidimensional Functional Assessment Questionnaire (MFAQ) and the Services Assessment Questionnaire (SAQ). The MFAQ yields information about functional activity in five domains:
1. Social resources: Quantity and quality of relationships with friends and family; availability of care in time of need.
 2. Economic resources: Adequacy of income and resources.
 3. Mental health: Extent of psychiatric well-being; presence of organicity.
 4. Physical health: Presence of physical disorders; participation in physical activities.

5. ADL: Capacity to perform various instrumental and physical (or bodily care) tasks that permit individuals to live independently.

The MFAQ consists of 70 questions answered by the respondent; 10 questions about the respondent answered by an informant (e.g., family member, service provider); 14 questions about the respondent answered by the interviewer; and five summary ratings (i.e., one for each of the five dimensions) completed by the interviewer.

The MFAQ commences with a mental status examination that is used: to determine whether the respondent is capable of answering the questions reliably; and to act as a screen for cognitive impairment.

The social resources section of the MFAQ focusses on the amount and adequacy of social interaction and availability of help in time of need. The economic resources section focusses on income, reserves and assets. The mental health section includes level of cognitive functioning, psychiatric status (excluding diagnoses), and self-evaluation. The physical health section describes the use of prescribed medications, the presence of illnesses and chronic conditions and the extent to which they interfere with daily living and self-evaluation of health status. Finally, there are 2 ADL scales 1) instrumental ADL; and 2) physical ADL.

The SAQ was developed to elicit information about 24 mutually exclusive and broadly encompassing types of generic services.

From the responses to the questions, a rater makes a judgement of the functional status in each dimension along a six-point scale (where 1 = excellent functioning) and 6 = totally impaired. The resulting 5 ratings can be combined in a variety of ways. The six-point scale can be collapsed into a dichotomous scale. In this way, individuals rated 1 to 3 are considered to be functioning adequately and those rated 4 to 6 to be impaired for that particular domain. A cumulative impairment scale (CIS) consists of totalling the individual impairment scores for each of the 5 dimensions. In this case, 5 would mean no impairment at all and 30 would mean total impairment in all areas.

INFORMATION ON
RELIABILITY/VALIDITY/
STANDARDIZATION:

In terms of reliability, three types of studies have been conducted with respect to MFAQ (Fillenbaum and Smyer, 1981):

- 1) test-retest reliability over a short period of time to determine the stability of responses;
- 2) interrater reliability; and
- 3) intrarater reliability.

The test-retest reliability trial indicated that 91 percent of the MFAQ items responses were identical on retest. This indicated substantial test-retest reliability.

A study of interrater reliability coefficients ranged from 0.67 to 0.87 for the five domains. The intrarater reliability was assessed with the original version of the MFAQ, which is very similar to the present version. It was determined that 80 percent of the intrarater coefficients were 0.80 or higher.

With respect to validity, interviewer summary ratings were compared with external, clinically relevant criteria measures. The resulting Kendall's r coefficients were: economic resources, 0.62; mental health, 0.60; physical health, 0.75; and ADL 0.83 (Fillenbaum and Smyer, 1981).

The OARS instrument is able to discriminate among different populations. In a study, the authors' results demonstrated the expected progressive direction between community residents, institutional residents and those referred to a clinic for age-related problems. The findings indicated that community residents were the most functional and the institutional residents the least.

OARS MULTIDIMENSIONAL FUNCTIONAL ASSESSMENT

A. SHORT PORTABLE MENTAL STATUS QUESTIONNAIRE (SPMSQ)

DOMAIN: Cognitive functioning, psychiatric status (but not diagnoses), remote memory, orientation, recent memory, long-term memory.

PURPOSE: The Short Portable Mental Status Questionnaire (SPMSQ) is part of the OARS Multidimensional Functional Assessment Questionnaire; however, it can be used separately as a standard test of mental status, that is easy to use. It was designed for use with community living elderly individuals.

MEASUREMENT APPROACH: Administered by a clinician in the office or in a hospital
General measurement report - assessment

RATING SCALE: The SPMSQ includes 10 items. These items are similar to those typically used by clinicians in evaluating mental status.

The SPMSQ generates a spread of scores from 0 to 10. The scores are a function of correct responses adjusted for years of education and race: 0 to 2 errors are presumed to correlate with intact intellectual function; 3 to 4 errors with mild intellectual impairment; 5 to 7 errors with moderate intellectual impairment; and 8 to 10 errors with severe intellectual impairment.

Examples of the Short Portable Mental Status Questionnaire are listed below:

- 1) What is the date today?

4) What is your telephone number?

9) What was your mother's maiden name?

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

The SPMSQ was administered to two groups aged 65 or over twice at approximately four-week intervals. Test-retest correlations were 0.82 and 0.83 for the two groups, indicating good reliability (Pfeiffer, 1975).

With respect to validity, the SPMSQ was administered to two non-random samples of the elderly (Pfeiffer, 1975). The first study involved 141 community living elderly individuals referred for evaluation. Of those diagnosed as not having organic brain syndrome 81.9 percent had intact or mild impairment on the SPMSQ. There was 92.3% agreement between clinical diagnosis of organic brain syndrome and moderate or severe impairment score on the SPMSQ. There was 87.5 percent agreement between clinical diagnosis of organic brain syndrome and moderate or severe impairment on the SPMSQ.

OARS MULTIDIMENSIONAL FUNCTIONAL ASSESSMENT

B. INSTRUMENTAL ACTIVITIES OF DAILY LIVING

- DOMAIN: Household or personal tasks (telephone use, travel, shopping, meal preparation, housework, taking own medicine, and handling personal finances).
- PURPOSE: The Instrumental Activities of Daily Living is part of the OARS Multidimensional Function Assessment; however, it can be used separately. Its purpose is to measure the capacity of elderly community living individuals to perform tasks necessary to maintain independent living.
- MEASUREMENT APPROACH: Administered by a trained interviewer or self-administered.
General measurement approach - assessment or self-report.
- RATING SCALE: The Instrumental Activities of Daily Living consists of seven items (telephone use, travel, shopping, meal preparation, housework, taking own medicine, and handling personal finances). All items are asked of both men and women.
- Each item is rated on a three-level scale: whether the activity in question can be performed unaided, whether some help is needed, or whether the activity cannot be performed at all.
- A global scale of IADL and ADL is made from a six-point scale, ranging from excellent (1) to totally impaired (6).

An example of the IADL is listed below:

- 1) Can you use the telephone...
 - 2 - without help, including looking up numbers and dialing.
 - 1 - with some help (can answer phone or dial operator in an emergency, but need a special phone or help in getting the number or dialing).
 - 0 - or are you completely unable to use the telephone.
 - - not answered

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION: Investigation indicates that combined IADL and ADL scales are reliable and valid (Fillenbaum, 1978).

REFERENCES:

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PACE II: PATIENT CARE MANAGEMENT (PCM)

DOMAIN: Medical, psychosocial factors.

PURPOSES: The purposes of the Patient Care Management are slightly different than its predecessor Patient Classification Form (PCF). However, both were essentially derived to provide comprehensive tools for considering the physical health of nursing-home patients. It is concerned with individual-client data and resource management and resource allocation. Moreover, it has also been used to review appropriateness and quality of care. Finally, PCM helps to determine appropriate client placement and continuing management of care.

MEASUREMENT APPROACH: Administered by health professional.
General measurement approach - observation, assessment.

RATING SCALE: There are a number of sections to the PCM. These are: admission data; demographic data; psychosocial factors, patient care, discharge data, and medical data. Medical data the main emphasis of PCM which contains 22 diagnostic categories and medical-status measures.

For medical data, the PCM uses checklists to identify the presence of diagnostically defined conditions, abnormal laboratory or other test results, risk factors, or impairments. The Patient Care Management is a patient-planning tool rather than an instrument that establishes a score. Completing the appropriate sections of the form dealing with medical conditions and impairments requires a review of history and test results and a physical examination.

The part of the medical section dealing with activities of daily living includes items such as: goes outside, walking, climbing, etc. These ADL items are classified into one of three groups:

- . mechanical aid;
- . human help; and
- . does not perform.

In addition, the rehabilitation potential for each item is also classified. As with diagnostic categories and medical-status measures there is no score derived.

With respect to instrumental activities of daily living, the PCM classifies such items as using telephone, handling money, etc. The classification scale used consists of 3 categories:

- . no problem;
- . performs with human help (indicate how many helpers); or
- . does not perform.

Again, there are no instructions for computing summary scores on the IADL part of the PCM.

A few examples of the Patient Care Management are listed below:

- 1) Psychological factors
 - Client's adjustments to care plan
 - Client's social interaction and adjustment to facility
 - Behavioural problems

2) Patient care

- Special procedures
 - . general nursing care
 - . rehabilitation/restorative
 - . teaching
 - . psychological

3) Medical data

- Physical function
 - . upper extremities
 - . lower extremities
 - . head and trunk.

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION: There are no estimates available for Patient Care Management on reliability.

REFERENCES:

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PATIENT EVALUATION CONFERENCE SYSTEM (PECS) (HARVEY AND JELLINEK)

DOMAIN: Medical, functional, communication, vocational, and social status are examined.

PURPOSE: The purpose of the PECS is to measure functional status, set rehabilitation goals, and monitor patient progress in rehabilitation. The tool was designed for use with rehabilitation in-patients.

MEASUREMENT APPROACH: Assessment by relevant health professional for each domain of function (i.e. Physician completes medical status variables, social worker completes social status variables, etc.). A self report version of this scale has been used in research (Jellinek, Torkelson and Harvey, 1982).

RATING SCALE: The PECS consists of over 100 items organized around discipline groups.

Rating of each item is on a eight point scale, thought to be more sensitive to changes in status than the more common 5 point scales. The use of assistive devices is considered in the scale categories, and objective definitions of performance are provided for each rating category rather than relying on the clinician's interpretation of categories such as "moderate assistance required". Both present status and expected outcome or goal status are scored. The scales are intended to be repeated at regular intervals and progress towards goals on the scales is meant to be the focus of patient treatment planning conferences.

An example of ADL items is provided below:

- | | |
|---|-----------------|
| 1. Performance in feeding | 0 1 2 3 4 5 6 7 |
| 2. Performance in hygiene and grooming | 0 1 2 3 4 5 6 7 |
| 3. Performance in dressing | 0 1 2 3 4 5 6 7 |
| 4. Performance in home management | 0 1 2 3 4 5 6 7 |
| 5. Performance of mobility in home environment (including utilization of environmental adaptations for communication) | 0 1 2 3 4 5 6 7 |

Scale: Items 1 - 7

- 0 = Nonfunctional
- 1 = Functional with manual assistance and assistive device
- 2 = Functional with manual assistance
- 3 = Functional with supervision and assistive device
- 4 = Functional with supervision
- 5 = Functional with assistive device
- 6 = Functional
- 7 = Within normal limits (WNL)

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION: Adequate inter-rater reliability has been reported by the developers (Harvey and Jellinek, 1981).

REFERENCES:

Harvey, R.F., & Jellinek, H.M. (1981). Functional Performance Assessment: Program Approach. Archives of Physical Medicine and Rehabilitation, 62, 456-461.

Harvey, R.F. & Jellinek, H.M. (1983). Patient Profiles: Utilization In Functional Performance Assessment. Archives of Physical Medicine and Rehabilitation, 64, 268-271.

Jellinek, H.M., Torkelson, R.M., & Harvey, R.F. (1982). Functional Abilities And Distress Levels In Brain Injured Patients At Long-term Follow-up. Archives of Physical Medicine and Rehabilitation, 63, 160-162.

(PAMIE) PHYSICAL AND MENTAL IMPAIRMENT OF FUNCTION EVALUATION

- DOMAIN:** Physical disability, mental status.
- PURPOSE:** The Physical and Mental Impairment-of-Function Evaluation (PAMIE) was designed to create an instrument for the quantitative description of a wide range of behaviours relevant to the adult chronically ill. It is also intended to assess, and determine status and progress during a patient's hospitalization. It is to be employed as a screening, diagnostic and placement device.
- MEASUREMENT APPROACH:** Administered by nursing personnel.
General measurement approach - assessment.
- RATING SCALE:** The PAMIE scale contains 77 items that focus on overt observable behaviour. It is the outgrowth of two previously used instruments; the self-care inventory (SCI) and the Patient Evaluation Scale (PES).
- The items are answered by a "yes" or a "no". PAMIE ratings are made on the basis of the previous week's behaviour.
- Ten subscales were generated by factor analysis. These are: self-care dependency, belligerent/irritable, mentally disorganized/confused, anxious/depressed, bedfast/moribund, behaviourally deteriorated, sensorimotor impaired, paranoid/suspicious, withdrawn/apathetic, and ambulatory.

INFORMATION ON
RELIABILITY/VALIDITY/
STANDARDIZATION:

With respect to reliability, Kane and Kane (1981) maintain that the PAMIE scale relies too heavily on the judgment of the caregivers.

The validity of the scale's factor scores suggested by their correlations with diagnostic data, impairment ratings on the Cumulative Illness Rating Scale (Linn, Linn and Gurd, 1968), and estimates of nursing time requirements.

REFERENCES:

- *Gurel, L., Linn, M.W., Linn, B.S. (1972). Physical and Mental Impairment-of-Function Evaluation In The Aged: The PAMIE Scale. Journal Of Gerontology, 27(1), 83-90.
- Israel, Liliane et al. (1984), Source Book Of Geriatric Assessment, Volume 1 - Evaluations In Gerontology; Volume 2 - Review of Analyzed Instruments New York: Karger, (in collaboration with the World Health Organization).
- Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.
- Pablo, R.Y. (1976). The Evaluation Of The Physical And Mental Impairments Of A Long-Term And Rehabilitation Hospital Patient Population. Canadian Journal Of Public Health, 67(July/August), 305-313.

PERFORMANCE TEST OF ACTIVITIES OF DAILY LIVING (PADL)

- DOMAIN:** Degree of autonomy and dependency, activity of daily living.
- PURPOSE:** The purpose of the Performance Test of Activities of Daily Living is to assess the self-care capacity of geriatric patients. It has been used primarily in institutional settings.
- MEASUREMENT APPROACH:** Administered by a health professional.
General measurement approach - observation of performance on test items.
- RATING SCALE:** The Performance Test of Activities of Daily Living requires patients to demonstrate the ability to perform 16 tasks considered essential for functional independence (e.g. drinking from cup, wipe nose, comb hair, stand up and walk and sit down, etc.)
- Each task is rated according to the following scale:
- 0 - performed without help;
 - 1 - unable to perform without help;
 - 9 - task not applicable or was not requested.
- The tests are administered with props. Subjects are asked to perform each task in order of difficulty. The PADL does not consider or code use of assistive devices, lack of cooperation or lack of comprehension.

Patients are scored by the proportion of tested functions that he/she correctly performed and are assigned to one of three categories of self-care.

Independent - completed all tasks without help;

Moderate Dependent - score between 75% and 99%; and

Dependent - score less than 75%.

Some examples of the Performance Test of Activities of Daily Living are listed below:

<u>Task Requests</u>	<u>Props To Be Used</u>
2. Use a tissue to wipe nose	tissue box
4. File nails	nail file
7. Turn faucet on and off	faucet
13. Sign name	paper and pen
15. Tell time	clock

INFORMATION ON
RELIABILITY/VALIDITY/
STANDARDIZATION:

The reliability of PADL was tested by Kuriansky and Gurland (1976). Reliability based on independent ratings of the interviewer and the observer was high (.90) in the pilot study.

Also, Kuriansky, Gurland, Fleiss and Cowan (1976) reported that test scores correlated with independent clinical assessments of mental status and physical conditions.

REFERENCES:

Kane, Rosalie A., and Kane, Robert L. (1981) Assessing The Elderly: A Practical Guide to Measurement. Lexington, Mass: Lexington Books.

Kuriansky, J.B., Gurland, B.J., Fleiss, J.L., Cowan, D. (1976). The Assessment Of Self-Care Capacity In Geriatric Psychiatric Patients By Objective And Subjective Methods. Journal Of Clinical Psychology, 32(1, January), 95-100.

*Kuriansky, J.B., Gurland, B.J. (1976). The Performance Test Of Activities Of Daily Living. International Journal Of Aging And Human Development, 7(4), 343-352.

PERSON-ENVIRONMENT FIT (KAHANA)

DOMAIN: Institutional environment (activities, policies, behaviour, and physical features), morale.

PURPOSE: The purpose of the Person-Environment Fit is to assess the congruence between the environment and the person. This is believed to be highly associated with morale. The scale was developed for use with institutionalized elderly persons.

MEASUREMENT APPROACH: Completed by staff member and resident.
General measurement approach - assessment and self report.

RATING SCALE: The Person-Environement Fit has 90 items describing the institutional resident and 70 items describing the environment (in terms of activities, policies, behaviour, and physical features).

The resident and the staff member(s) each complete both parts to give a "subjective" and "objective" view of both individual and the environment.

Five dimensions are produced by factor analysis: activity; stimulation; changeability versus sameness, impulsiveness versus impulse control; independence versus privacy. Trichotomous scores on each dimension are produced. These are: high, medium and low.

The "fit" on the variable is the person score - the environment score. Unfortunately, Kahana's paper does not provide information on how this measurement is made.

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION: None.

REFERENCES:

Kahana, E. (1974). Matching Environments To Needs Of The Aged: A Conceptual Scheme. in: Gubrium, J.F. (ed.) Late Life: Communities And Environmental Policy. Springfield, Ill., Charles C. Thomas.

Kane, Rosalie A., Kane, Robert L., (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass: Lexington Books.

*Schooler, K.K. Environmental change and the elderly. In I. Altman and J.F. Wohlwill (Eds.), Human behaviour and environment: Advances in theory and research. Vol. 1, New York: Plenum Press, 1976.

PERSON-ENVIRONMENT INCONGRUENCE BY ELDERLY WITH ALZHEIMER'S DISEASE

DOMAIN: Cognitive competence, physical health, and self-reported needs and preferences.

PURPOSE: The purpose is to determine patterns of person-environment interactions over time, as the older person with Alzheimer's disease gradually deteriorates in cognitive function, and as the patient and his/her age-matched peer experience changes in their physical health.

MEASUREMENT APPROACH: Administered by trained professional, self-reported. General measurement approach - assessment/observation.

RATING SCALE: The three domains of person - environment are: cognitive functioning, physical functioning, and needs and preferences. The specific dimensions being measured in each domain are described below:

The cognitive domain consists of three dimensions: orientation, memory and abstraction. For the measurement of the subject's individual dimensions, orientation is assessed, every six months, with the Dementia Rating Scale, the DRS construction scale, and the Block Design test from the WAIS-R. Also, at the start of the study the spatial orientation component of the Halstead-Wepman Aphasia test is used.

The memory dimension is assessed in the individual by the Fuld Object Memory test and the Wechsler Memory Scale, while the abstraction dimension of cognitive function is assessed in the individual by the

conceptualization scale of the DRS and the similarities scale of the WAIS-R.

The physical health domain also consists of three dimensions: motor, sensory function and manual dexterity. Information on motor disabilities is obtained from medical records and an Activities of Daily Living questionnaire administered in face-to-face interviews with the subjects and their families.

The sensory dimension consists primarily of visual and auditory functioning in the individual. Manual dexterity is assessed in the individual through questions in the ADL questionnaire about instrumental problems.

Needs and preferences consist of seven dimensions: preference for order/effort, activity/stimulation, physical privacy, solitude, control, safety/security, and affiliation.

There are 11 parts to the environment study, ranging from Part A to K. Parts A through H are conducted with designated family members, excluding the subject. These sections include such items as the following: description of dwelling, neighbourhood and community; (subject's) personal interests; personalization of home; opportunities for solitude/privacy; ADL, equipment, and furnishings; accidents; and special measures, features, devices (to assist the subject). The items in Part I are asked as the interviewer is led on a tour of the interior of the home by the family member. Part J consists of observation of the exterior of the dwelling by the interviewer. Finally, Part K is completed by the interviewer after leaving the subject's home.

Each part (A through K) examines aspects of the subject's residential environment, paralleling the measurement of the subject's individual dimensions within the areas of cognitive and physical functioning, and needs and preference.

Indices of person and environmental characteristics along each of the 13 dimensions of the 3 domains is constructed in order to determine the relative power of each person variable, each environmental variable, and each P-E index in predicting depression, behavioural disturbances and institutionalization.

Examples of environmental assessment survey are listed below:

Part F: ADL, Equipment and Furnishings

17. Are there any elements or features about the operation of opening, closing, or locking of any of the windows in the home with which Mr./Ms. _____ previously had no difficulty, but now finds difficult to use, needs assistance, or no longer uses certain windows or features on windows because of their difficulty?

Yes: _____ No: _____

Item/Difficulty: Specify if problem is cognitive, sensory, motor or other

1. _____
2. _____
3. _____

Part J: Yard and Dwelling Exterior

12. Maintenance of Site and Yard: Scale (Circle One)

5 High extremely well-maintained
site/yard; (particularly in the

context of a "high-maintenance" yard - one requiring a great deal of effort to maintain, e.g. pruning, edging, etc.).

- | | | |
|---|------------------|--|
| 4 | Above
Average | maintained, everything under complete control |
| 3 | Average | maintained, however some/a few areas or elements may need work, but not out of control |
| 2 | Below
Average | maintained, but some areas or elements getting out of control and require attention |
| 1 | Low | most or all of site/yard requires work to put under control and maintainable state; a mess |

Comments:

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION: Not currently available.

REFERENCES:

Kiyak, H.A., Small, R., Sumitani, M. (1985). Adaptation To Person - Environment Incongruence By Elderly With Alzheimer's Disease. (Research Supported By Grant No. AG-04070 From The National Institute on Aging). Paper Presented At Meetings Of The Gerontological Society of America, New Orleans, November, 1985.

PHILADELPHIA GERIATRIC CENTER INSTRUMENTAL ACTIVITIES OF DAILY LIVING SCALE
(IADL)

DOMAIN: Autonomy, activities of daily living, social life.

PURPOSE: The purpose of the PGC Instrumental Activities of Daily Living Scale is to assess everyday functional competence. It is intended for use with both community living and institutionalized elderly individuals.

MEASUREMENT APPROACH: Application by social worker or nurse's aide.
General measurement report - observation.

RATING SCALE: "Instrumental activities of daily living" are what Brody and Lawton have termed a group of behaviours that are more complex and less directly body-oriented than physical self-maintenance. The IADL rates performance of activities such as: using the telephone, shopping, using public transportation, cooking, doing laundry, housekeeping, handling money and taking medicine.

Most items are on a three-or-four-point Guttman scale; however, there are no instructions on summing items. An example of the IADL is presented below:

A. Ability to use telephone

1. Operates telephone on own initiative - looks up and dials numbers, etc;
2. Dials a few well-known numbers;
3. Answers telephone but does not dial;
4. Does not use telephone at all.

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

The PGC Instrumental Activities of Daily Living Scale has a reproducibility coefficient of .94 according to Lawton and Brody (1969). The authors do not report inter-rater reliability. The validity of the IADL scale was tested by determining its correlation with other scales: the Physical Classification (PC), the Mental Status Questionnaire (MSQ), and the Behaviour and Adjustment rating scales (BA). The rough regularity of relationships shown between the IADL scale and the three other functional measures gives support to the validity of the measure.

However, questions regarding the scope of IADL items and sex differences in applicability of IADL items have been raised (Kane and Kane, 1981).

REFERENCES:

Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.

Lawton, M.P. (1972). Assessing The competence Of Older People. in: kent, D.P., Kastenbaum, R., Sherwood, S. (eds.). Research Planning And Action For The Elderly: The Power And Potential Of Social Science. New York: Behavioural Publications.

*Lawton, M.P., Brody, E.M. (1969). Assessment Of Older People: Self-Maintaining And Instrumental Activities Of Daily Living. The Gerontologist, 9(3), 179-185.

PHILADELPHIA GERIATRIC CENTER INSTRUMENTAL ROLE MAINTENANCE SCALE (LAWTON)

- DOMAIN: Selected IADL items such as frequency of meal preparation and shopping; distance of shopping from residence; performance of laundry.
- PURPOSE: The initial purpose of the PGC Instrumental Role Maintenance Scale was as an assessment tool for women applying for nursing home admission.
- MEASUREMENT APPROACH: Self-report.
- RATING SCALE: The type of scale used for the PGC Instrumental Role Maintenance Scale is a Guttman scale. Lawton's scale rates the frequency of shopping and meal preparation (other than breakfast) rather than the capacity to do these activities. It is felt that the frequency obtained provides a much more objective and more relevant measure. The scale items are designed for use in Philadelphia, including specific store names on some of the rating scales.

Examples of the PGC Instrumental Role Maintenance Scale are provided below:

- | | <u>Score</u> |
|---|--------------|
| A. How often do you cook a meal other than breakfast? (lunch and dinner served in congregate dining room) | + |
| 1) Twice a week or more | |
| 2) Once a week | |
| 3) Two or three times a month | |
| 4) Once a month | |
| 5) Less than once a month | |
| 6) Not at all | |
| B. Where have you shopped in the last two months? | + |
| 0) Not at all | |
| 1) York House Store | |

INFORMATION OF

RELIABILITY/VALIDITY/

STANDARDIZATION: Lawton (1972) reports that the reproductivity coefficient equals .94. With respect to validity it is the scale focusses on a few select IADL items, most of which are traditionally performed by women.

REFERENCES:

Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.

*Lawton, M.P. (1972). Assessing The Competence Of Older People. in: Kent, Donal P., Kastenbaum, R., Sherwood, S. (eds.) Research Planning And Action For The Elderly: The Power And Potential Of Social Science. New York: Behavioral Publications.

PHILADELPHIA GERIATRIC CENTER MENTAL STATUS QUESTIONNAIRE

- DOMAIN:** Orientation in time and place, memory, intelligence, independence, and ability to locate activities of daily living.
- PURPOSE:** The Philadelphia Geriatric Center Mental Status Questionnaire was developed to provide a scale which assured greater accuracy in determining the degree of senile dementia. While designed for general elderly populations, it has been tested primarily with institutionalized elderly individuals.
- MEASUREMENT APPROACH:** Administered by physician, nurse, nurse's aide.
General measurement approach - assessment.
- RATING SCALE:** The PGC Mental Status Questionnaire consists of 35 questions, which include items from Kahn's Mental Status Questionnaire and Pfeiffer's Short Portable Mental Status Questionnaire.
- The answers to the 35 questions indicate the status of brain function, perception, psychomotor speed, intelligence, personality/morale, health habits, orientation for place and time, memory (recent or remote) and general information (memory).

To determine the degree of senile dementia the number of correct answers are added together. The following scale is used:

- 0 = total loss
- 1 - 10 = severe
- 11 - 20 = moderate
- 21 - 33 = mild
- 34 - 35 = not impaired

Examples of the scale are listed below:

- 1. What is your name?
- 4. Are you married or single?
- 7. Where is your room?
- 15. What month is it now?
- 22. What was your mother's first name?
- 28. Do you have our own teeth?

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

The authors found a high correlation between the clinical judgments of the degree of senile dementia and the results of the questionnaire.

REFERENCES:

- *Fishback, D.B. (1977). Mental Status Questionnaire For Organic Brain Syndrome, With A New Visual Counting Test. Journal Of The American Geriatrics Society, 25(4), 167-170.
- Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.

PHILADELPHIA GERIATRIC CENTER MORALE SCALE

DOMAIN: Morale, sense of well-being.

PURPOSE: The Philadelphia Geriatric Centre Morale Scale was designed due to the perceived need for a multidimensional scale of morale appropriate for the elderly. It is applicable to both institutionalized and non-institutionalized elderly individuals.

MEASUREMENT APPROACH: Self-administered.

RATING SCALE: When originally devised in 1972, the PGC Morale Scale consisted to 22 questions and yielded six factors: surgency, attitude toward own age, satisfaction with the status quo, agitation, optimism and lonely dissatisfaction. In 1975, acting on the advice of Morris and Sherwood, Lawton dropped 5 items because they lacked face validity as measures of morale. The 17 remaining items fell into three factors:

- . agitation (6 items);
- . attitude toward own aging (5 items); and
- . lonely dissatisfaction (6 items).

Examples of the PGC Morale Scale are presented below:

Factor 1 - Agitation

- . Little things bother me more this year.
- . I take things hard.

Factor 2 - Attitude Towards Own Aging

- . Things keep getting worse as I get older.
- . As you get older you are less useful.

Factor 3 - Lonely Dissatisfaction

- . I have a lot to be sad about.
- . How much do you feel lonely?

INFORMATION ABOUT

RELIABILITY/VALIDITY

STANDARDIZATION:

The 1972 version of the PGC Morale Scale was tested for test-retest reliabilities. For two samples the overall coefficients were .75 and .80. The test-retest reliabilities of some of the factors, especially those with only two or three items were much lower.

The three factors developed from the 17 item scale have an advantage over the original six factor version in that longer factors produce better test-retest reliability scores.

Lawton found in 1975 that the 3 factors (from the 17 item scale) have a high degree of internal consistency as determined by Cronbach's alpha (.85, .81 and .85 for the three).

The validity of the earlier scale was assessed. The 22 item scale had a correlation of .47 with the ranking of clients on morale by a psychologist and nurse who were familiar with them. Hence, the validity appeared to be only moderate.

REFERENCES:

Israel, Liliane et al. (1984). Source Book of Geriatric Assessment, Volume 1 - Evaluations in Gerontology; Volume 2 - Review of Analyzed Instruments. New York: Karger (in collaboration with the World Health Organization).

Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide To Meaurement. Lexington, Mass.: Lexington Books.

Lawton, M.P. (1972). The Dimensions Of Morale. in: Kent, D.P., Kastenbaum, R., Sherwood, S. (eds.). Research Planning And Action For The Elderly: The Power And Potential Of Social Science. New York: Behavioural Publications.

Lawton, M.P. (1971). The Functional Assessment of Elderly People. Journal Of The American Geriatrics Society, 19(6, June), 465-481.

*Lawton, M.P. (1975). The Philadelphia Geriatric Centre Morale Scale: A Revision. Journal of Gerontology, 30(1), 85-89.

PHILADELPHIA GERIATRIC CENTER MULTILEVEL ASSESSMENT INSTRUMENT (MAI)

DOMAIN: Behavioural competence (health, activities of daily living, cognition, time use, social interaction), psychological well-being and perceived environmental quality.

PURPOSE: The purpose of the Philadelphia Geriatric Centre Multilevel Assessment Instrument (MAI) is to measure the well-being of the elderly (both institutionalized and non-institutionalized). It is intended to be used for research and for the assessment of service needs.

MEASUREMENT APPROACH: Administered by a health professional.
General measurement approach - assessment.

RATING SCALE: The PGC Multilevel Assessment Instrument consisted of 216 items in 7 domains:

- . physical health
- . cognition
- . activities of daily living
- . time use
- . social interaction
- . personal adjustment
- . perceived environment

Interviewers completed the ratings in each of the 7 domains using a 5-point summary rating scale.

The domain indices and subindices are scorable in clinical situations by counting or summing.

Examples of the scale are listed below:

- . Physical health
 - self-rated health

- health behaviour
- health cognitions
- . Time use
- . Personal adjustment
 - morale
 - psychiatric symptoms

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

The PGC MAI was assessed for reliability by Lawton, Moss, Fulcomer and Kleban (1982). Internal consistency (alpha) of each domain was adequate but as expected was partly a function of scale length; the two least consistent were small subindices. All the other alphas were in the useable range.

With respect to test and retest reliability, the majority of indexes received perfect scores.

REFERENCES:

- *Lawton, M.P., Moss, M., Fulcomer, M., Kleban, M.H. (1982). A Research And Service Oriented Multilevel Assessment Instrument. Journal Of Gerontology, 37(1), 91-99.

PULSES

DOMAIN: Independence in life functioning (physical condition, sensory components, and intellectual and emotional adaptability).

PURPOSE: The purpose of PULSES was to develop a more structured approach to functional assessment. It was designed for use with rehabilitation clients. It has been used to evaluate and classify functional capacity and to depict an anticipated realistic rehabilitation goal.

MEASUREMENT APPROACH: Application by physician.
General measurement report-assessment.

RATING SCALE: The PULSES profile is a scale consistency of 6 components, reflecting functional independence.

These 6 components are:

- . Physical condition basic health/illness status;
- . Upper Limb Functions: self-care activities;
- . Lower Limb Functions: mobility;
- . Sensory Components: sight, communications;
- . Excretory Functions: control of sphincters;
and
- . Support Factors: psychological/emotional,
family/social/financial supports.

Scoring for each component ranges from 1, intact and independent of help from another person, to 4, fully dependent for each function of the component area. The subscores for each of the 6 areas are then added together to give an overall measure of functional independence.

Total scores on PULSES range from 6 to 24, 6 being the highest and 24 the lowest. The higher the score, the more independent is the person. A scale of 6 represents essentially unimpaired independence.

Granger, Albrecht and Hamilton suggest that a score of 12 on the PULSES profile is a useful operational cutting point for distinguishing lesser from more marked disability and 16 for indicating very severe disability.

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

The validity of the PULSES profile is indicated by high correlations between PULSES scores and scores on the Barthel Index (Granger et al, 1979, O'Toole, et al. 1985). Test-retest reliability has been reported to be .87 and interrater reliability .95 (Granger et al, 1979).

REFERENCES:

Kane, Rosalie A., Kane, Robert L. (1981). Assessing The Elderly: A Practical Guide To Measurement. Lexington, Mass.: Lexington Books.

*Granger, C.V., Albrecht, G.L., Hamilton, B.B. (1979). Outcome of Comprehensive Medical Rehabilitation: Measurement By PULSES Profile And the Barthel Index. Archives Of Physical Medicine And Rehabilitation, 60(April), 145-154.

Gresham, G.E., Labi, M.L.C. (1984). Functional Assessment Instruments Currently Available For Documenting Outcomes In Rehabilitation Medicine. in: Granger, C.V., Gresham, G.E. Functional Assessment In Rehabilitation Medicine. Baltimore: Williams and Wilkins.

Moskowitz, E. (1985). PULSES Profile in Retrospect. Archives Of Physical Medicine And Rehabilitation, 66(September), 647-648.

O'Toole, D.M., Goldberg, R.T., Ryan, B. (1985). Functional Changes In Vascular Amputee Patients: Evaluation By Barthel Index, PULSES Profile And ESCROW Scale, Archives Of Physical Medicine And Rehabilitation, 66(August), 508-511.

RAPID DISABILITY RATING SCALE II

DOMAIN: Disability, dependency, mental confusion, depression, cooperation.

PURPOSE: The purpose of the Rapid Disability Rating Scale II is to measure easily and accurately the degree of disability in self-care independent functioning. It is intended to define how the elderly individual usually functions.

MEASUREMENT APPROACH: Administered by nurse or personnel acquainted with individual.
General measurement approach - assessment.

RATING SCALE: The original Rapid Disability Scale consists of 16 items and uses a 3-point scale. The revised version sharpened item definitions. It also added three items to increase the breadth of the scale and omitted one where there was duplication. Moreover, response items were changed to four-point ratings in order to increase group discrimination and make the scale more sensitive to changes in treatment.

The 18 items are grouped into 3 categories: assistance with activities of daily living; degree of disability; and degree of special problems.

Since the purpose of the scale is to define how the individual usually functions (and not on what he/she is able to do), it is reasonable to include any devices, aids or prostheses that are normally used by the patient in determining the level of functioning. While these

aids are considered in rating functional level, there is no recording of their use.

The score for a particular item ranges from 1 (none) to 4 (severe). A score of 1 means complete independence or normal behaviour for that item; 2 means "a little disability"; 3 means "a lot of disability" and 4 means that the person cannot, will not or may not (because of medical restriction) perform a behaviour or has the most severe form of disability or problem.

Total scores can range from 18 (no disability) to 72 (the most severe disabilities).

Elderly persons living in the community with minimal disabilities have scores averaging 21 to 22. For hospitalized elderly patients, the average is approximately 32, and for those transferred to nursing homes the average is about 36.

Examples of the scale are listed below:

- . Assistance with activities of daily living
 - eating
 - none - a little - a lot
 - spoonfed/intravenous/tube
 - bathing (including getting supplies, supervising)
 - none - a little - a lot
 - must be bathed
- . Degree of disability
 - communication (expressing self)
 - none - a little - a lot
 - does not communicate

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

The test-retest values for the Rapid Disability Rating Scale II range from $r = 0.58$ to $r = 0.96$ between the first and second ratings (Linn and Linn, 1982).

With respect to validity, scales were found to be significantly correlated with physician judgements of status and with the number and length of previous hospitalizations (Linn, 1967). The scale correctly identified 72 percent of the time patients who would die within six months. Also, the ratings on the scale were correlated significantly with ratings of impairment on a 13 item scale made independently by physicians (Linn and Linn, 1982).

Other validating information was obtained in a study of 172 elderly patients in the community. The ratings on the Rapid Disability Rating Scale - 2 correlated significantly with ratings on impairment on a 13-item scale, devised independently by physicians ($r = 0.27$) and with patients' assessment of their own health using a 6 point scale ($r = 0.43$). (Linn and Linn, 1982).

REFERENCES:

Bruett, T.L., Overs, R.P. (1969). A Critical Review of 12 ADL Scales. Physical Therapy, 49(8), 857-861.

Israel, Liliane et al. (1984). Source Book Of Geriatric Assessment, Volume 1 - Evaluations In Gerontology; Volume 2 - Review of Analyzed Instruments. New York: Karger (in collaboration with the World Health Organization).

*Linn, M.W. (1967). A Rapid Disability Rating Scale. Journal Of The American Geriatrics Society, 15(2), 211-214.

*Linn, M.W., Linn, B.S. (1982). The Rapid Disability Rating Scale - 2. American Geriatrics Society, 30(6, June), 378-382.

REHABILITATION INDICATORS

Rehabilitation Indicators (RIs) refer to a group of functional assessment instruments, which can be used separately or together. The Status Indicators and the Activity Pattern Indicators assess client/consumer's behavioural output. The Skills Indicators assess a client/consumer's behavioural tools. Finally, the Environmental Indicators assess the client/consumer's environmental context (this latter one is still in the developmental stage and not reported below).

A. STATUS INDICATORS (SIs)

DOMAIN: Vocation, income, education, self-care, family, transportation, State-Federal Vocational Rehabilitation Statuses.

PURPOSE: The purpose of the Status Indicators is to provide categorical descriptions of important facets of a client/consumer's life. Essentially, status indicators are to provide a "shorthand" for describing client behaviour. Developed for use with rehabilitation clients and the disabled both in the community and in institutions.

MEASUREMENT APPROACH: Administered by counsellor, health professional or trained personnel.
General measurement approach - assessment

RATING SCALE: The Status Indicators consists of 6 domains:
vocational; income; education; self-care; family role;
and transportation.

INFORMATION ON RELIABILITY/VALIDITY/

STANDARDIZATION: Validity of the SIs was assessed by comparing the data obtained from over 100 clients's self-report with data

derived from available records and reports. The validity coefficients were uniformly high, with all items achieving agreement in 95 percent or more of the cases (Brown, Gordon and Diller, 1984).

B. ACTIVITY PATTERN INDICATORS (API)

DOMAIN: Behavioural outputs (activities, choices)

PURPOSE: The purpose of the Activity Pattern Indicators is to provide a direct description of behavioural output, which may provide primary indicators relevant to rehabilitation. Also, API can define the effects of impairment on the client's life, of non-supportive (or supportive) environments, and of rehabilitation programs.

MEASUREMENT APPROACH: Administered by caregiver or self.
General measurement approach - assessment, observation or self-report.

Two approaches have been developed to collect API data from client/consumers: the Inventory, and the Timeline.

RATING SCALE: The API consists of seven groups: work, school, and rehabilitation; quiet time; personal care; housework, household business; child care; recreation and social activities; travel activities; and other activities.

- A. The Inventory - The Inventory consists of a list of 105 activities in 15 categories (e.g., the activity "eating or snacking" is in the "personal care" category).

There are 2 formats for the Inventory: an interview form (Inventory), and a self-administered, questionnaire form (Self-Administered Inventory).

For the Inventory, the client/consumer determines which activities occurred within a specified time period (e.g., "last week") and records data on one to five pre-selected dimensions relevant to each activity.

Activity data is recorded according to the following dimensions: frequency of occurrences, duration of a typical occurrence, location of occurrence, level of social interaction during the activity, and type of functional assistance required during occurrences.

The Inventory Diary can be used (optional) as a adjunct to the Inventory, to aid the clients recall of frequency of activity occurrences.

For the Self-Administered Inventory, a much simpler tool, the client/consumer reviews the list of activities and indicates his/her frequency of participation in each.

- B. The Timeline - The client is asked to reconstruct the activities he/she participated in, during the recent past (one, two or more days). The interview is more flexible than the API Inventory as it enables the clients to use their own words in describing activities.

The basic tasks of the Timeline are:

- . to reconstruct the activities that occurred within the recent past; and
- . to record information regarding the optional dimensions of social interaction and functional assistance.

Five dimensions can be recorded on the Timeline: frequency, duration, location, degree of social interaction and functional assistance.

As with the Inventory there is the option of using a Timeline Diary as an adjunct to the Timeline in order to aid the client's recall of activities during the Timeline interview.

On the Timeline, data as recorded is transcribed onto the Inventory format. API data can be left unaggregated in order to focus on specific activities.

Typically, however, API data are aggregated in several different ways to indicate activity patterns:

- . activities can be grouped into content categories (e.g., recreation, social, vocational, etc.)
- . activities can be grouped into dichotomies (e.g., active vs. passive).

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

The test-retest reliability of the three API activity categories was assessed on sample of 104 lowback pain clients. Reliability coefficients ranged from .48 to .91 (Rock et al, 1984). The validity of APIs was measured in terms of describing groups of clients, a form of construct validity. The differences in

functioning of two or more groups were compared to expected differences. Moreover, this measure was repeated several times. Sufficient consistent collaboration of predicted differences resulted in a wide range of studies suggesting that APIs provide a valid tool for group interpretation (Diller et al, 1983).

C. SKILL INDICATORS (SKIs)

DOMAIN:	Behavioural tools (self-care, mobility, social behaviour, communication, vocational activity and homemaking).
PURPOSE:	The purpose of the skill indicators is to assist those directly involved in rehabilitation processes and to planners, evaluations and researchers. SKIs provide a strong base of information from which focussed planning can emerge. Moreover, it provides a broad look at areas of client functioning which need attention, that might hinder goal attainment.
MEASUREMENT APPROACH:	Assessment by interviewer General measurement report - assessment or observation
RATING SCALE:	The content of SKIs cover 14 areas of functioning: vocational skills, self-care, communication, mobility, household tasks, social interaction, seeking-employment, child care, cognition, political and community skills, selecting an education program, attendant school, problem solving, and employment career movement. Each of these 14 areas consist of several groups of skills and within each group a sample of skills is indicated. For example, in the self-care area of functioning, there are 10 groups of skills and one of these groups, "eating and drinking" contains 17 skills related to eating and

drinking. There are 78 skill groups consisting of approximately 700 skills.

The Skill Indicators can be implemented as a set or subsets of skills can be pre-selected for implementation. SKIs do not consist of an N-item scale to be applied identically across situations.

The SKIs exist in a standard format only at the level of individual items. Hence, comparability of data is available for specific skill levels rather than at the level of broad skill groups.

Several dimensions of one skill can be assessed, several examples are listed below:

- . regularity of occurrence;
- . speed of performance;
- . precision;
- . amount of assistance.

An example of skills from the Skill Indicator list is illustrated below:

- 08.00 manipulating small objects
 - . .01 uses key to open door
 - . .03 turns on television or radio
 - . .06 winds wrist watch
 - . .10 opens and closes drawers.

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

Reliability is a complex issue for SKIs because a uniform SKI instrument does not exist. A study by O'Neill, Gordon and Brown (1983), however, obtained very high reliability figures.

With respect to validity, the differences in functioning of two or more groups were compared to expected differences. Sufficient consistent results were obtained to indicate that APIS provides valid tool (Brown and Diller, 1984).

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SELF-RATINGS OF HEALTH AMONG THE OLD AND THE OLD-OLD (FERRARO)

- DOMAIN:** Health, financial well-being, sex, education and political activity between the old and the old-old.
- PURPOSE:** The purpose of Ferraro's self-ratings of health among the old and the old-old was to analyze the validity of self-ratings among the elderly, with particular regard for the age of the individual. An attempt was made to try and classify the aged according to various criteria, and to examine whether the self-ratings of health among the elderly are affected by the age, sex and/or educational attainment of the respondent.
- MEASUREMENT APPROACH:** Self-report.
- RATING SCALE:** The self-ratings of health are measured with the following question: "Generally speaking, would you describe your present health as excellent (1), good (2), fair (3), or poor (4)."
- Two objective measures of health status are included. One is the number of illnesses or physiological disorders reported by the individual from a checklist of 55 items. The other measure of objective health status is a disability scale. Items on the scale include an assessment of the degree of difficulty in walking, using stairs or inclines, lifting and carrying, stooping and reaching.
- INFORMATION ON
RELIABILITY/VALIDITY/
STANDARDIZATION:** Ferraro (1980) dicotomized aged into old (65-75) and old-old (75+) and used t-tests of means scores on

objective health conditions to test for age differences within self-rating categories. The findings indicated that objective measures of health status (i.e., disability and the number of reported illnesses) are significantly related to an elderly individual's self-rating of health. Thus, the self-rating measures of health are a valid means, as well as economical, of gaining information about the health of the elderly.

As part of the analysis, correlation and regression techniques were also applied in order to estimate the linear relationship between the independent variables (sex, age, education) and the self-rating of health. It was revealed that the old-old respondents tended to express better health than the old when the analysis controlled for other pertinent factors. Moreover, females tended to report better health than males even though they had more disability and reported more physiological disorders. Thus, if self-rating measures are to be used as way of gathering health information on the elderly, then controls may need to be used for age and sex.

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SOCIAL NETWORK INDEX

- DOMAIN: Intimate contacts (marriage and contacts with friends and relatives) and church and group membership.
- PURPOSE: The purpose of the Social Network Index is to examine the effects of different relationships, both individually and cumulatively, on mortality.
- MEASUREMENT APPROACH: Administered by social worker or trained interviewer.
General measurement report - assessment
- RATING SCALE: The Social Network Index examines four sources of social contact:
- . marital status;
 - . contacts with friends and relatives;
 - . church membership; and
 - . group membership.

Questions dealing with church and group membership consist of yes/no responses. With respect to friends and relatives, three questions use the following scale; none; 1 or 2; 3 to 5; 6 to 9; 10 or more.

Overall, the social network index considers not only the number of social ties but also their relative importance.

Examples from the Social Network Index are listed below:

- . How many close friends do you have? (People that you feel at ease with, can talk to about private matters, and can call on for help)
- . How many relatives do you have that you feel close to?

. Do you belong to any of these kinds of groups?

- church group?
- a social or recreational group?

INFORMATION ON

RELIABILITY/VALIDITY/

STANDARDIZATION:

Berkman (1983) indicates that scores on the Social Network Index were related to instability and mortality during a nine-year follow-up period.

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